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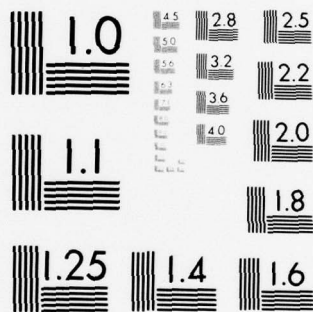
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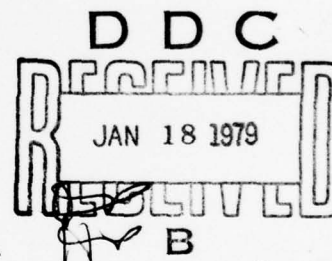
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BOOK 1
FORTRAN

APRIL 1977

SOFTWARE MAINTENANCE MANUAL

EXPLORATORY SYSTEMS
CONTROL MODEL (ESM)



for

THE DEFENSE COMMUNICATIONS AGENCY
WASHINGTON, D.C. 20305

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The software describe in this

TU10 Magtapes

FOREWORD

This publication is the Software Maintenance Manual for the Exploratory Systems Control Model (ESM). The software described is contained on four system tapes. Book 1 contains description, flowcharts, and listings for programs written in FORTRAN. Book 2 contains description, flowcharts, and listings for programs written in MDMPL Assembly Language. This manual was prepared by the Burroughs Corporation and is submitted in accordance with the requirements of contract DCA100-75-C-0054.

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Introduction

The ESM system software is contained on four TU10 Magtapes. Tape #1 contains the source, object, task, overlay description language, message, system, ATEC simulation, and command files used for the User Language, Record Move Utility, and Interprocess Communication and Resource Sharing Demonstration Programs for host processors A and B. Tape #2 contains microcode source and object files for loading the eleven B7* CIE microprocessors, and the microcode loader utility (ESMLDR). Tape #3 contains the task, source, object, and overlay description language files for the Mini-D Micro Programming Language (MDMPL) Assembler. Tape #4 contains the ESM Diagnostic Library.

References for the FORTRAN language used include the Digital Equipment Corporation documents PDP-11 FORTRAN Language Reference Manual (DEC-11-CFLRA-C-D) and IAS/RX-11 FORTRAN IV User's Guide (DEC-11-LMFUA-C-D). It is also assumed that the reader is familiar with the PDP-11 RSX11M operating system (Version 2) including MCR commands (Reference - RSX11M Operator's Procedures Manual - DEC-11-OM06A-B-D) and the utilities EDI, FLX, and PIP (Reference - RSX11M Utilities Procedures Manual - DEC-11-OMOGA-B-D).

References for the MDMPL Assembler include Appendix A of this manual which provides B7* programming information, Appendix B of the manual which provides an MDMPL Instruction List, and Section 4.6 of the ESM User's Manual which describes Assembler use, CIE Instruction Functions, and programming examples.

In general, FORTRAN programs are stored in UIC [20,20], CIE Microcode programs are stored in UIC[1,20], and Diagnostics are stored in UIC[1,4]. System Tape Directory Listings are presented below.

ESH TAPE #1 - USER LANGUAGE

MCR>FLX TT0:=MT0:[*,*]*.*/LI

 DIRECTORY MT0:[0,0]
 18-MAR-77

RCHV1.FOR	9.	18-MAR-77	<233>	[20,20]
RCHV1.OBJ	22.	18-MAR-77	<233>	[20,20]
RCHV1.ODL	1.	18-MAR-77	<233>	[20,20]
RCHV1.TSK	53.	18-MAR-77	<233>	[20,20]
RCHV5.ODL	1.	18-MAR-77	<233>	[20,20]
RCHV5.FOR	9.	18-MAR-77	<233>	[20,20]
RCHV5.TSK	53.	18-MAR-77	<233>	[20,20]
RCHV5.OBJ	22.	18-MAR-77	<233>	[20,20]
PRDC1.TSK	48.	18-MAR-77	<233>	[20,20]
PROC1.OBJ	26.	18-MAR-77	<233>	[20,20]
PROC1.ODL	1.	18-MAR-77	<233>	[20,20]
PROC1.FOR	11.	18-MAR-77	<233>	[20,20]
PROC5.OBJ	27.	18-MAR-77	<233>	[20,20]
PROC5.ODL	1.	18-MAR-77	<233>	[20,20]
PROC5.TSK	48.	18-MAR-77	<233>	[20,20]
PROC5.FOR	11.	18-MAR-77	<233>	[20,20]
M1710.FOR	1.	09-MAR-77	<233>	[20,20]
M1710.OBJ	1.	09-MAR-77	<233>	[20,20]
M1710.TSK	3.	09-MAR-77	<233>	[1,1]
M1710.STB	1.	09-MAR-77	<233>	[1,1]
INFOPH.OBJ	67.	09-MAR-77	<233>	[20,20]
HSP.OBJ	36.	09-MAR-77	<233>	[20,20]
EFTERD.OBJ	9.	09-MAR-77	<233>	[20,20]
EFCKTD.OBJ	4.	09-MAR-77	<233>	[20,20]
EFTRKD.OBJ	4.	09-MAR-77	<233>	[20,20]
EFLOCF.OBJ	5.	09-MAR-77	<233>	[20,20]
EFDIR.OBJ	2.	09-MAR-77	<233>	[20,20]
STESH.CMD	1.	09-MAR-77	<233>	[20,20]
ESMLDR.TSK	32.	09-MAR-77	<233>	[20,20]
HDMPL.TSK	86.	09-MAR-77	<233>	[20,20]
USROVL.ODL	1.	09-MAR-77	<233>	[20,20]
P0000.OBJ	21.	09-MAR-77	<233>	[20,20]
P0000.FOR	11.	09-MAR-77	<233>	[20,20]
P00001.OBJ	21.	09-MAR-77	<233>	[20,20]
P00001.FOR	11.	09-MAR-77	<233>	[20,20]
P1000.FOR	6.	18-MAR-77	<233>	[20,20]
P1000.OBJ	12.	18-MAR-77	<233>	[20,20]
P10001.FOR	6.	18-MAR-77	<233>	[20,20]
P10001.OBJ	12.	18-MAR-77	<233>	[20,20]
P2000.FOR	5.	18-MAR-77	<233>	[20,20]
P2000.OBJ	11.	18-MAR-77	<233>	[20,20]
P3000.FOR	11.	18-MAR-77	<233>	[20,20]
P3000.OBJ	26.	18-MAR-77	<233>	[20,20]
P3001.OBJ	17.	18-MAR-77	<233>	[20,20]
P3001.FOR	7.	18-MAR-77	<233>	[20,20]
P4000.FOR	13.	18-MAR-77	<233>	[20,20]
P4000.OBJ	29.	18-MAR-77	<233>	[20,20]
P40001.FOR	13.	18-MAR-77	<233>	[20,20]
P40001.OBJ	29.	18-MAR-77	<233>	[20,20]
P4001.FOR	11.	18-MAR-77	<233>	[20,20]

P5000.FOR	4.	18-MAR-77	<233>	[20,20]
P5000.OBJ	8.	18-MAR-77	<233>	[20,20]
RDLOOP.OBJ	2.	18-MAR-77	<233>	[20,20]
RDLOOP.FOR	1.	18-MAR-77	<233>	[20,20]
WRLOOP.FOR	1.	18-MAR-77	<233>	[20,20]
WRLOOP.OBJ	2.	18-MAR-77	<233>	[20,20]
HST.FOR	4.	18-MAR-77	<233>	[20,20]
HST.OBJ	11.	18-MAR-77	<233>	[20,20]
HST1.FOR	4.	18-MAR-77	<233>	[20,20]
HST1.OBJ	11.	18-MAR-77	<233>	[20,20]
USRLN5.TSK	98.	18-MAR-77	<233>	[20,20]
USRLN1.TSK	98.	18-MAR-77	<233>	[20,20]

TOTAL OF 1181. BLOCKS IN 65. FILES

>

ESM TAPE #2 - CIE MICROCODE

MCR>FLX TT1:=MT0:[*,*]*.*/LI

DIRECTORY MT0:[0,0]
12-MAR-77

HST1. OBJ	9.	12-MAR-77 <233> [1,20]
GAT2. OBJ	8.	12-MAR-77 <233> [1,20]
GAT3. OBJ	8.	12-MAR-77 <233> [1,20]
CRT4. OBJ	9.	12-MAR-77 <233> [1,20]
HST5. OBJ	9.	12-MAR-77 <233> [1,20]
GAT6. OBJ	8.	12-MAR-77 <233> [1,20]
GAT7. OBJ	8.	12-MAR-77 <233> [1,20]
CRT8. OBJ	9.	12-MAR-77 <233> [1,20]
HST9. OBJ	8.	12-MAR-77 <233> [1,20]
GAT10. OBJ	8.	12-MAR-77 <233> [1,20]
GAT11. OBJ	8.	12-MAR-77 <233> [1,20]
HST1L. OBJ	9.	12-MAR-77 <233> [1,20]
CRT4L. OBJ	9.	12-MAR-77 <233> [1,20]
HST5L. OBJ	9.	12-MAR-77 <233> [1,20]
CRT8L. OBJ	9.	12-MAR-77 <233> [1,20]
CRT4S. OBJ	9.	12-MAR-77 <233> [1,20]
CRT8S. OBJ	9.	12-MAR-77 <233> [1,20]
HST9S. OBJ	8.	12-MAR-77 <233> [1,20]
CRT4. DAT	119.	12-MAR-77 <233> [1,20]
HST5. DAT	100.	12-MAR-77 <233> [1,20]
GAT7. DAT	97.	12-MAR-77 <233> [1,20]
HST9. DAT	102.	12-MAR-77 <233> [1,20]
ESMLDR. FOR	2.	12-MAR-77 <233> [20,20]
ESMLDR. OBJ	5.	12-MAR-77 <233> [20,20]
ESMLDR. TSK	32.	12-MAR-77 <233> [20,20]
MDMPL. TSK	86.	12-MAR-77 <233> [20,20]

TOTAL OF 697. BLOCKS IN 26. FILES

>

ESM TAPE #3 - MDMPL ASSEMBLER

FLX/CLO:=MT0:[20,20]*./LI

DIRECTORY MT0:[20,20]
26-FEB-77

FASS.OBL	1.	26-FEB-77 <233>
MDMLST.CMD	1.	26-FEB-77 <233>
SUSAN.FOR	13.	26-FEB-77 <233>
BLOCK.FOR	3.	26-FEB-77 <233>
RESCAN.FOR	7.	26-FEB-77 <233>
WRT.FOR	9.	26-FEB-77 <233>
SQUASH.FOR	3.	26-FEB-77 <233>
SCAN.FOR	5.	26-FEB-77 <233>
COLUMN.FOR	7.	26-FEB-77 <233>
CONDIT.FOR	11.	26-FEB-77 <233>
LITRL.FOR	13.	26-FEB-77 <233>
LOGIC.FOR	16.	26-FEB-77 <233>
LOGICA.FOR	13.	26-FEB-77 <233>
MDMPL.TSK	86.	26-FEB-77 <233>
SUSAN.OBJ	27.	26-FEB-77 <233>
BLOCK.OBJ	1.	26-FEB-77 <233>
RESCAN.OBJ	10.	26-FEB-77 <233>
WRT.OBJ	11.	26-FEB-77 <233>
SQUASH.OBJ	3.	26-FEB-77 <233>
SCAN.OBJ	7.	26-FEB-77 <233>
COLUMN.OBJ	11.	26-FEB-77 <233>
CONDIT.OBJ	23.	26-FEB-77 <233>
LITRL.OBJ	23.	26-FEB-77 <233>
LOGIC.OBJ	38.	26-FEB-77 <233>
LOGICA.OBJ	38.	26-FEB-77 <233>

TOTAL OF 380. BLOCKS IN 25. FILES

>

ESM TAPE #4 - DIAGNOSTICS

MCR>FLX TT1:=MT0:[*,*]*.*/LI

DIRECTORY MT0:[0,0]
10-MAR-77

MEMCK0. OBJ	2.	26-FEB-77 <233> [1,4]
BLOUT. OBJ	2.	26-FEB-77 <233> [1,4]
LPCK0. OBJ	2.	26-FEB-77 <233> [1,4]
GTBO. OBJ	1.	26-FEB-77 <233> [1,4]
CRTOBJ. OBJ	2.	26-FEB-77 <233> [1,4]
PDPO. OBJ	1.	26-FEB-77 <233> [1,4]
GTBOA. OBJ	1.	26-FEB-77 <233> [1,4]
CTCGO. OBJ	2.	26-FEB-77 <233> [1,4]
FDP. OBJ	6.	26-FEB-77 <233> [1,4]
CTCCO. OBJ	3.	26-FEB-77 <233> [1,4]
CONMEM. OBJ	5.	26-FEB-77 <233> [1,4]
BLKS. DAT	9.	26-FEB-77 <233> [1,4]
MEMCK. DAT	10.	26-FEB-77 <233> [1,4]
LPCK. DAT	8.	26-FEB-77 <233> [1,4]
FDP. DAT	4.	26-FEB-77 <233> [1,4]
GTB. DAT	4.	26-FEB-77 <233> [1,4]
GTBA. DAT	5.	26-FEB-77 <233> [1,4]
CTCG. DAT	11.	26-FEB-77 <233> [1,4]
CTCC. DAT	23.	26-FEB-77 <233> [1,4]
CRTCK. DAT	21.	26-FEB-77 <233> [1,4]
PDP. FOR	3.	26-FEB-77 <233> [1,4]
PDP. TSK	31.	26-FEB-77 <233> [1,4]
CONMEM. FOR	2.	26-FEB-77 <233> [1,4]
CONMEM. TSK	32.	26-FEB-77 <233> [1,4]
TI. DAT	5.	10-MAR-77 <233> [1,4]
TI. OBJ	1.	10-MAR-77 <233> [1,4]

TOTAL OF 196. BLOCKS IN 26. FILES

>

1. FORTRAN PROGRAMS

1.1 MDMPL MICROCODE ASSEMBLER

The eleven B7*CIE microprocessors are loaded with microcode object files that are stored on the PDP11 processor connected to loop #2. The object files consist of records made up of 128 12 bit micro-instructions. An MDMPL assembler written in FORTRAN is provided with the ESM for microcode creation or modification. The Mini-D Microprogramming Language (MDMPL) is described in the B7* documentation package. Microcode source files can be created or edited using the RX-11M Editor Utility (EDI). The assembler takes a microcode source file that consists of ASCII, 80 character fixed fields and translates it into a 256 byte binary object file.

An MDMPL source file has the following format:

```
$12BIT (first line - start in column 7)

PROGRAM-ID name. (second line - start in column 8)

value statements (start in column 15)

program statements (start in column 15)

END?. (start in column 15)
```

Statements are always terminated by a period. Labels start in column 8 and terminate with a period. Labels can consist of up to 7 alpha-numeric characters and may not contain embedded assembler reserved words, e.g., EXT, LCL, LST, MST, AOV, IF, STEP, SKIP, ELSE. Statements may not start at or before column 8, and by convention start at column 15. Comments following statements, by convention, start at column 40. A * in column 7 indicates a comment card. After the file is edited using the EDI Utility, it must be put into a fixed record, 80 character, formatted ASCII card images for input to the MDMPL assembler. This can be done by writing the file to tape, and then back again to disk using the file transfer (FLX) utility, e.g.

```
FLX MT0:/DO=DK0:[1,4]MICRO.DAT/RS
```

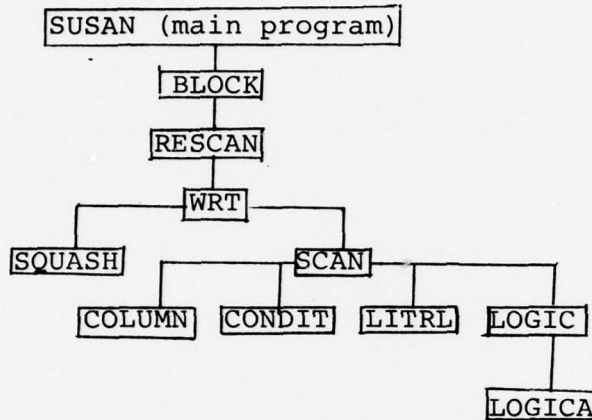
```
FLX DK0:/FA:80.=MT0:[1,4]MICRO.DAT
```

FLX and EDT commands are given in the RSX11M Utilities Procedures Manual.

When the source file is properly formatted on disk (latest version) run the MDMPL assembler by entering RUN [20,20]MDMPL on the DECSCOPE. The program will prompt for the source filename and object filename. By convention, source microcode files are of type DAT, and object microcode filenames end with the character "O" and of type OBJ. Default conditions allow for program listing with possible error messages on the DECSCOPE. Output may be stopped by entering control C, and it may be resumed by hitting the return key. For a hard copy printout enter RED TT0: = TT1: before running MDMPL. The number of errors is printed at the end of the program.

THE PROGRAM

The assembler is divided into eleven modules. The assembler's modules are structurally overlayed so that the assembler is able to be executed when only small partitions of main memory are available. The overlay structure is in the file FASS.ODL and is set up as follows:



In this type of structure, subroutines on the same line are not allowed to call each other, but are able to call any other subroutine. Following is a description of each module including the important variables of the program.

Main Program - SUSAN

Important Variables:

All variables are of type INTEGER except for those variables beginning with the letter "Z" or those explicitly stated otherwise.

ZA - ZA is the name of the source file that contains the micro-code to be translated. This variable is formatted as REAL*8 and is dimensioned as 3. This allows the name of the file to be up to 24 alpha-numeric characters in length but the first character of the name must be a letter.

ZX - The assembler writes the binary code represented by the micro-code of the source file to the object file, ZX. The variable is REAL*8 and is dimensioned as 3. The name of the file can be as long as 24 alpha-numeric characters but the first character of the name must be a letter.

MPAD - MPAD is initialized at 0. MPAD stands for the Memory Program Address Descriptor. Each address contains 8, 12, or 16 bits of information, depending on the value of DEV. This is an integer type incremented by one every time information is put into the address. MPAD is not incremented for comments, "VALUE" statements or labels but is incremented by two for "CALL" and "GOTO" statements if DEV equals 12 or 16.

Y - Y is similar to MPAD. Y is one greater than MPAD so that

a DO loop can be used in the program. Y is the subscript of CODE and is an INTEGER type variable.

CODE - CODE contains the information to be sent to the object file. CODE is 256 bytes long and is written over to the object file whenever the 256 bytes are filled or when the program is finished. CODE is dimensioned at 128 and is of type INTEGER. LITRL, LOGIC, LOGICA and CONDIT write the correct information into CODE.

COL - COL is the "workspace" for the assembler. Each record of the source file is read into COL, one at a time. The assembler looks at this array checking for the various conditions necessary. COL is of type INTEGER and is dimensioned at 80.

NCOL - NCOL is created by SQUASH by taking all spaces or blanks out of COL. This allows the assembler to look at a microcode instruction and expect a semi-ordered field. The array NCOL is dimensioned at 30 and of type INTEGER.

N - N keeps track of the number of errors. If N is equal to 10, the assembler will stop. N is an integer variable.

Alpha-numeric Characters - A - Z and 0 - 9 are represented as variables with Q's between the characters themselves. For example, "K" = QKQ and "5" = Q5Q. Other special variables are as listed:

QAR = "+"	QER = "."
QBR = "-"	QFR = "\$"
QCR = "*"	QGR = "G"
QDR = "="	QHR = " "

All alpha-numeric variables are of type LOGICAL*1.

Eg. Searching for an equal sign in column 4 is done by the code
" IF (NCOL(4).EQ.QDR)...")

FVAR, VVAR, VCON, VAR, CON - FVAR contains the variable name from a "B =" literal assignment statement. This corresponds to the "VALUE" statement of label with the same variable. Each subscript of the array VVAR contains the variable before "VALUE" and VCON contains the constant corresponding to it. VAR contains the labels that start in column 8 and CON's array contains the address of where each label is located. FVAR, VVAR and VAR are LOGICAL*1 variables. VCON and CON are INTEGERS.

(Eg. B = ZERO. ZERO is put into FVAR. The assembler then looks at VVAR and VCON which respectively contain ZERO and 0 which was accomplished from the microcode instruction: ZERO VALUE 0.)

Description:

The main program (SUSAN) calls RESCAN, SQUASH, WRT, CONDIT, COLUMN, LITRL, LOGIC, SCAN. The only input is the source file ZA. The output files are the object file ZX, and the DECWRITER or the DECSCOPE. The main program looks at the file ZA eighty character records at a

time. It handles the "number of bits" record, the "Program - ID" record and the "END?." record. It also takes care of the preliminary testing necessary to send the microcode instruction line to the proper module for further testing and manipulation. The preliminary testing includes checking for a period, an equal sign, a character in column 8, an asterik, or any reserved words. Reserved words include "IF", "B=", "STEP", "EXEC". If an error occurs, the subroutine WRT is called to report the error to the user.

BLOCK DATA

Description:

The BLOCK DATA contains all the necessary COMMON areas and COMMON data necessary for the assembler. All variables are explicitly defined here.

COLUMN

Important Variables:

X - X contains a 1 if "VALUE" is in NCOL. If "VALUE" is not in NCOL, X is equal to 0 and informs the assembler that the instruction is a label. X is an integer.

DCOL - If a subscript of NCOL contains a numeric character, the same subscript of DCOL becomes its numeric decimal value. This array is dimensioned at 30 and is of INTEGER type.

NCOL - NCOL is created by SQUASH by taking all spaces or blanks out of COL. This allows the assembler to look at a microcode instruction and expect a semi-ordered field. The array NCOL is dimensioned at 30 and is of type INTEGER.

VVAR - VVAR is a list of the variables that come before the reserved word "VALUE" in a "VALUE" statement. Variables and labels are allowed to be up to 7 characters long. VVAR is dimensioned as (80, 8) and is of type LOGICAL*1.

C - The array C aids in the process of getting the variable before "VALUE" of a "VALUE" statement into VVAR. It is an INTEGER type and is dimensioned at 15.

VCON - VCON contains a list of all the constants from the "VALUE" statements. VVAR contains the variables corresponding to the constants in VCON. VCON receives its values from the variable AC. VCON is dimensioned at 80.

V - VVAR and VCON are lists of labels and constants corresponding to each "VALUE" statement found. V acts as a pointer for these queues. If the assembler is looking for the fifth "VALUE" statement, V will have a value of 5. V is an INTEGER.

AC - AC contains the constant following "VALUE" in decimal form. It uses the number represented by the decimal values in DCOL to form a constant. AC's maximum value is 255.

VAR - VAR is a list for all labels. VAR is dimensioned at (100, 8). The labels contained in VAR can be only 7 characters long.

L - L is similiar to V. It is a pointer for VAR and CON. L's maximum value is 100.

CON - CON contains the MPAD value of the corresponding label found in VAR. CON's dimension is 100 and it is an INTEGER variable.

Description:

COLUMN is called by SUSAN. COLUMN calls SCAN and WRT. The variables V and L are sent as parameters between COLUMN and SUSAN.

COLUMN is called by SUSAN if the reserved word "VALUE" is in the instruction or if there is a character in column 8. If the word "VALUE" is found, VVAR and VCON receive the correct values. If column 8 is occupied, VAR and CON receive their appropriate values. These arrays are used to calculate the code of an instruction when it reaches LITRL.

WRT

Important Variables:

VARF - VARF is the variable corresponding to the error messages. For every value of VARF there is an error message printed related to the syntax condition that was broken. VARF is an INTEGER. It is sent by the program calling WRT.

PCK - PCK is set at 1, 2, 3, 4 or 5, and is set by the program calling WRT. A "1" writes the line only (COL); a "2" writes the line (COL) with CODE(Y) = 77777, MPAD, the error message and increments N; a "3" writes the number of errors; a "4" writes the MPAD, CODE(Y) and the line (COL); and a "5" writes only the error message.

N - N keeps track of the number of errors. If N is equal to 10, the the assembler will stop. N is an INTEGER variable.

MPAD, CODE (Y), COL - The contents of all these are printed whenever a line is sent to the DECWRITER or DECSCOPE. This is executed if PCK equals "4".

MPAD - MPAD is initialized at 0. MPAD stands for the Memory Program Address Descriptor. Each address contains 8, 12 or 16 bits of information, depending on the value of DEV. This is an integer type variable incremented by one everytime information is put into the address. MPAD is not incremented for comments, "VALUE" statements or labels but is incremented by 2 for "CALL" or "GOTO" statements if DEV equals 12 or 16.

CODE - CODE contains the information to be sent to the object file. CODE is 256 bytes long and is written over to the object file whenever the 256 bytes are filled or when the program is finished. CODE is dimensioned at 128 and is of type INTEGER. LITRL, LOGIC, LOGICA, and CONDIT write the correct information into CODE.

COL - COL contains the "workspace" for the assembler. Each record of the source file is read into COL, one at a time. The assembler looks at this array checking for the various conditions necessary. COL is of type INTEGER and is dimensioned at 80.

Description:

WRT is called by SUSAN, COLUMN, CONDIR, LOGICA, LOGIC, LITRL and SQUASH. WRT writes its output to either the DECWRITER or the DECSCOPE. WRT is divided into 5 sections and depending on the value of PCK that section is executed. Depending on the value of PCK, WRT will either write only the line; or write the line, the MPAD value, CODE(Y) value of 77777, the error message and increment N; or write the number of errors; or write the line, the MPAD value and the CODE(Y) value; or write only the error message. Most of the output writing of this assembler is accomplished by this subprogram.

CONDIT

Important Variables:

NCOL - NCOL is created by SQUASH by taking all spaces or blanks out of COL. This allows the assembler to look at a microcode instruction and expect a semi-ordered field. The array NCOL is dimensioned at 30 and of type INTEGER.

CODE - CODE contains the information to be sent to the object file. CODE is 256 bytes long and is written over to the object file whenever the 256 bytes are filled or when the program is finished. CODE is dimensioned at 128 and is of type INTEGER. LITRL, LOGIC, LOGICA and CONDIR write the correct information into CODE.

Y - Y is similar to MPAD. Y is one greater than MPAD so the a DO loop can be used in the program. Y is the subscript of CODE and is an INTEGER type variable.

MPAD - MPAD is initialized at 0. MPAD stands for the Memory Program Address Descriptor. Each address contains 8, 12 or 16 bits of information, depending on the value of DEV. This is an integer type variable incremented by one everytime information is put into the address. MPAD is not incremented for comments, "VALUE" statements or labels, but is incremented by 2 for "CALL" or "GOTO" statements if DEV equals 12 or 16.

Alpha-numeric characters - A - Z and 0 - 9 are represented as variables with Q's between the characters themselves. For example, "K" = QKQ and "5" = Q5Q. Other special variables are as listed:

QAR = "+"	QER = "."
QBR = "-"	QFR = "\$"
QCR = "*"	QGR = "G"
QDR = "="	QHR = " "

All alpha-numeric variables are of type LOGICAL*1.
 (Eg. Searching for an equal sign in column 4 is done by the code
 "IF (NCOL(4).EQ.QDR)...")

Description:

CONDIT calls SCAN and WRT. CONDIT is called by the main program SUSAN if any of the reserved words, "IF", "STEP", "SKIP", "JUMP", "EXEC" are found. All condition statements are sent here. There can not be any "-" or "+" signs and there must be a period. CONDIT checks for "STEP", "JUMP", "EXEC", "SKIP", "MST", "AOV", "LST", "ABT", "EXT", "LC1", "LC2" and "LC3". Depending on what is found, CODE(Y) representing that instruction is set to the correct value.

SQUASH

Important Variables:

NCOL - NCOL is created by SQUASH by taking all spaces or blanks out of COL. This allows the assembler to look at a microcode instruction and expect a semi-ordered field. The array NCOL is dimensioned at 30 and of type INTEGER.

COL - COL is the "workspace" for the assembler. Each record of the source file is read into COL, one at a time. The assembler looks at this array checking for the various conditions necessary. COL is of type INTEGER and is dimensioned at 80.

QER - Represents a "."

QHR - Represents a " ".

Description:

This subroutine calls WRT for its relay of error messages to the user. SQUASH is called by SUSAN and RESCAN. This subroutine creates NCOL. By ignoring all blanks, most microcode instructions are no more than 25 characters in length. This also enables fixed fields to be set up to allow for the scanning of reserved words in certain columns. (Eg. such as "IF" in columns 1 and 2.)

SCAN

Important Variables:

A - A is either a 1, 2, 3, 4 or 5 depending on the length of the Reserved Word being scanned for. If A is greater than 5, then SCAN simply returns to the subprogram that called it.

B, C, D, E, F - Contain the characters of the reserved word that is being scanned for, one character per variable. If C, D, E or F are not being used they are sent to SCAN anyway set at 0. They are type INTEGER.

J - If the reserved word was found, J is sent back to the program that called SCAN with the value of the column where the last character being scanned for was found in NCOL. If the reserved word was not found, J is sent back equal to 0.

Alpha-numeric Characters - A - Z and 0 - 9 are represented as variables with Q's between the characters themselves. For example, "K" = QKQ and "5" = Q5Q. Other special variables are as listed:

QAR = "+"	QER = "."
QBR = "-"	QFR = "\$"
QCR = "*"	QGR = "G"
QDR = "="	QHR = " "

All alpha-numeric variables are of type LOGICAL*1.
(Eg. Searching for an equal sign in column 4 is done by the code "IF(NCOL(4).EQ.QDR)...")

G - G is SCAN's COMMON name for NCOL, the "squashed" COL. G does not have any spaces until after the period.

SCAN - SCAN is a variable since the subprogram is an integer function. If the word being scanned for is found, SCAN comes back with a 1; if not, it comes back with a 0.

Description:

SCAN does not call any subroutines. It is called by SUSAN, LITRL, LOGIC, LOGICA, RESCAN, COLUMN and CONDIT. SCAN is an integer function that determines whether or not a reserved word is in NCOL (or G). If it is, SCAN receives a 1 and if not, it receives a 0. The subprogram also states where the last character of the reserved word was found in NCOL. This subprogram is used extensively throughout the assembler program.

LITRL

Important Variables:

V - VVAR and VCON are lists of labels and constants corresponding to each "VALUE" statement found. V acts as a pointer for these queues. If the assembler is looking for the fifth value statement, V will have a value of 5. V is an INTEGER.

NCOL - NCOL is created by SQUASH by taking all spaces of blanks out of COL. This allows the assembler to look at a microcode instruction and expect a semi-ordered field. The array NCOL is dimensioned at 30 and of type INTEGER.

DCOL - If a subscript of NCOL contains a numeric character, the same subscript of DCOL becomes its numeric decimal value. This array is dimensioned at 30 and is an INTEGER.

AC - AC contains the constant following "VALUE" in decimal form. It takes the number represented by the decimal values in DCOL. AC's maximum value is 225.

VCON - VCON contains a list of all the constants from the "VALUE"

statements. VVAR contains the variables corresponding to the constants in VCON. VCON receives its constants from the variable AC. VCON is dimensioned at 80.

C - C is equal to 1 if the line contains the reserved word "CALL" and 0 if it does not.

FVAR - FVAR contains the variable name from a "B =" statement. This corresponds to the "VALUE" statements or labels with the same variable. FVAR is an array dimensioned at 8 and is a LOGICAL*1 type array.

MPAD - MPAD is initialized at 0. MPAD stands for the Memory Program Address Descriptor. Each address contains 8, 12 or 16 bits of information, depending on the value of DEV. This is an INTEGER type incremented by one everytime information is put into the address. MPAD is not incremented for comments, "VALUE" statements or labels but is incremented by 2 for "CALL" and "GOTO" statements if DEV equals 12 or 16.

Y - Y is similar to MPAD. Y is one greater than MPAD so that a DO loop can be used in the program. Y is the subscript of CODE and is an INTEGER type variable.

CODE - CODE contains the information to be sent to the object file. CODE is 256 bytes long and is written over to the object file whenever the 256 bytes are filled or when the program is finished. CODE is dimensioned at 128 and is of type INTEGER. LITRL, LOGIC, and CONDIT write the correct information into CODE.

CON - CON contains the MPAD value of the label in VAR.

VAR - The variable FVAR is compared to the list VAR. If the value in FVAR is found in VAR, the corresponding MPAD value is found in CON and is added to the present value of CODE(Y). It is a LOGICAL*1 type array.

Alpha-numeric Characters - A - Z and 0 - 9 are represented as variables with Q's between the characters themselves. For example, "K" = QKQ and "5" = Q5Q. Other special variables are as listed:

QAR = "+"	QER = "\$"
QBR = "-"	QFR = "\$"
QCR = "*"	QGR = "G"
QDR = "="	QHR = " "

All alpha-numeric variables are of type LOGICAL*1.

Eg. Searching for an equal sign in column 4 is done by the code "IF (NCOL(4).EQ.QDR)..."

Description:

LITRL is called by SUSAN if the reserved words "DEV",

"CALL" or "GOTO" are found in NCOL. LITRL calls SCAN and WRT. The first part of the program handles all "DEV" statements. It calculates the constant to the right of the equal sign and sends the correct code to CODE(Y). The program also checks a microcode instruction to see if it is either a "CALL" or a "GOTO" statement. In RESCAN, VAR is complete so LITRL knows what address the "CALL" or "GOTO" statement is referring to even if it is a forward reference. "CALL" and "GOTO" statements receive 2 address locations and they receive the correct CODE from CON.

RESCAN

Important Variables:

CCT - CCT is the number of records read of the source file ZA. It is an INTEGER variable.

DEV - DEV takes on the value 8, 12 or 16. The way the assembler is now written, it really is not that important. However, the assembler can be programmed to act differently depending on the value of DEV. It can be programmed to work on an 8, 12 or 16 bit machine.

Alpha-Numeric Characters - A - Z and 0 - 9 are represented as variables with Q's between the characters themselves. For example, "K" = QKQ and "5" = Q5Q. Other special variables are as listed:

QAR = "+"	QER = "."
QBR = "-"	QFR = "\$"
QCR = "*"	QGR = "G"
QDR = "="	QHR = " "

All alpha-numeric variables are of type LOGICAL*1.

(Eg. Searching for an equal sign in column four is done by the code "IF (NCOL(4).EQ.QDR)...")

DUP - DUP is initialized at 0. If there is a duplicate label, DUP is set to 1 and an error message is written. DUP is an INTEGER.

VAR - VAR is a list for all labels. VAR is dimensioned at (100, 8). The labels contained in VAR can be only 7 characters long. VAR is a LOGICAL*1 array.

CON - CON contains the MPAD value of the corresponding label found in VAR. CON's dimension is 100 and is an INTEGER variable.

FVAR - FVAR contains the variable name from a "B =" statement. This corresponds to the "VALUE" statement or label with the same variable. FVAR is an array dimensioned at 8 and is a LOGICAL*1 type array.

COL - COL is the "workspace" for the assembler. Each record of the source file is read into COL, one at a time. The assembler looks at this array checking for the various conditions necessary. COL is of type INTEGER and is dimensioned at 80.

MP - MP is RESCAN's MPAD.

Description:

RESCAN is called by SUSAN. RESCAN calls SQUASH. This assembler is a two-pass assembler with the first pass being accomplished by RESCAN. RESCAN is call by SUSAN in order to pre-scan for all labels and label addresses so that VAR and CON are complete with the necessary information before the second pass is made. If there is a new label, that label is put into VAR. All "VALUE" statements must be before any other executable statement. RESCAN lets the user know when the first pass is being performed by relaying the message "WAIT FOR FIRST PASS-SCAN FOR LABELS" to him.

LOGIC

Important Variables:

NCOL - NCOL is created by SQUASH by taking all spaces of blanks out of COL. This allows the assembler to look at a microcode instruction and expect a semi-ordered field. The array NCOL is dimensioned at 30 and of type INTEGER.

CODE - CODE contains the information to be sent to the object file. CODE is 256 bytes long and is written over to the object file whenever the 256 bytes are filled or when the program is finished. CODE is dimensioned at 128 and is of type INTEGER. LITRL, LOGICA and CONDIT write the correct information into CODE.

Y - Y is similiar to MPAD. Y is one greater than MPAD so that a DO loop can be used in the program. Y is the subscript of CODE and is an INTEGER type variable.

MPAD - MPAD is initialized at 0. MPAD stands for the Memory Program Address Descriptor. Each address contains 8, 12 or 16 bits of information, depending on the value of DEV. This is an INTEGER type incremented by one everytime information is put into the address. MPAD is not incremented for comments, "VALUE" statements or labels but is incremented by 2 for "CALL" and "GOTO" statements if DEV equals 12 or 16.

Alpha-Numeric Characters - A - Z and 0 - 9 are represented as variables with Q's between the characters themselves. For example, "K" = QKQ and "5" = Q5Q. Other special variables are as listed:

QAR = "+"	QER = "."
QBR = "-"	QFR = "\$"
QCR = "*"	QGR = "G"
QDR = "="	QHR = " "

All alpha-numeric variables are of type LOGICAL*1.

(Eg. Searching for an equal sign in column 4 is done by the code "IF NCOL(4).EQ.QDR)...")

U - U is LOGIC's DCOL. It translates numeric characters into numeric decimal values. It is dimensioned at 30.

COL - COL is the "workspace" for the assembler. Each record of the source file is read into COL, one at a time. The assembler looks at this array checking for the various conditions necessary. COL is of the type INTEGER and is dimensioned at 80.

T - T represents the position of the column that follows the column that contains an "=" sign. This is used extensively to figure out what follows the "=" sign in a statement.

Description:

LOGIC calls SCAN, WRT and LOGICA. It is called by SUSAN (main program) when the reserved words "A1", "A2", "A3", "B=", "BEX", "=" or "ONES" are found. LOGIC, with the help of LOGICA, handles all the syntax required for the reserved words. The program checks for required syntax before the equal sign, finds the equal sign and then checks for the required syntax that follows it. If there are any syntax errors, the error message "FORMAT ERROR - UNDEFINED SEMANTICS" or a more explanatory message will be relayed to the user.

LOGICA

Important Variables:

NCOL - NCOL is created by SQUASH by taking all spaces of blanks out of COL. This allows the assembler to look at a microcode instruction and expect a semi-ordered field. The array NCOL is dimensioned at 30 and of type INTEGER.

CODE - CODE contains the information to be sent to the object file. CODE is 256 bytes long and is written over to the object file whenever the 256 bytes are filled or when the program is finished. CODE is dimensioned at 128 and is of type INTEGER. LITRL, LOGICA and CONDIT write the correct information into CODE.

T - T represents the position of the column that follows the column that contains an "=" sign. This is used extensively to figure out what follows the "=" sign in a statement.

Y - Y is similar to MPAD. Y is one greater than MPAD so that a DO loop can be used in the program. Y is the subscript of CODE and is an INTEGER type variable.

MPAD - MPAD is initialized at 0. MPAD stands for the Memory Program Address Descriptor. Each address contains 8, 12 or 16 bits of information, depending on the value of DEV. This is an INTEGER type incremented by one everytime information is put into the address. MPAD is not incremented for comments, "VALUE" statements or labels but is incremented by two for "CALL" and "GOTO" statements if DEV equals 12 or 16.

Alpha-Numeric Characters - A - Z and 0 - 9 are represented as variables with Q's between the characters themselves. For example,

"K" = QKQ and "5" = Q5Q. Other special variables are as listed:

QAR = "+"	QER = "."
QBR = "-"	QFR = "\$"
QCR = "*"	QGR = "G"
QDR = "="	QHR = " "

All alpha-numeric variables are of type LOGICAL*1.

(Eg. Searching for an equal sign in column 4 is done by the code "IF (NCOL(4).EQ.QDR)...")

COL - COL is the "workspace" for the assembler. Each record of the source file is read into COL, one at a time. The assembler looks at this array checking for the various conditions necessary. COL is of type INTEGER and is dimensioned at 80.

Description:

LOGICA calls SCAN and WRT. LOGICA is called by LOGIC when the character after the equal sign is an A. It checks for reserved words and characters such as "+", "-", "NOR", and "EQV" that follow the "A1", "A2", "A3" of "AMPCR" that directly follows the equal sign in the microcode program. LOGICA works very similarly to LOGIC, with the correct information going into CODE(Y) when a certain syntax is met.

Task Building:

The RSX11M task builder utility (TKB) is used to build the MDMPL task from the object files and overlay description language file. The following TAB commands are used:

TKB [20,20]MDMPL,TSK=FASS.ODL/MP,[1,1]SYSLIB/LB:\$SHORT

Options:

UNITS = 3

ACTFIL = 3

ASG = TT1:1, SY0:2:3

MAXBUF = 256

EXTSCT = \$\$FSR1:2264

Notes Concerning the MDMP L Assembler Flowchart:

Table A gives the flowchart letter connectors and their corresponding positions in the program. In the program, whenever a search for a reserved word occurred, the subfunction SCAN was called. SCAN sends back the position of the last letter of the reserved word found in NCOL and whether or not the reserved word was actually located. In the flowchart, LOGICA is included with LOGIC. The beginning of LOGICA is located at Z in the flowchart.

TABLE A

FLOWCHART LETTER CONNECTOR	PROGRAM LOCATION (MODULE - LABEL)
A	SUSAN - 30
B	SUSAN - 240
C	RESCAN - 47
D	RESCAN - 44
E	RESCAN - 48
F	SCAN - 1
G	SCAN - 2
H	SCAN - 3
I	SCAN - 4
J	SCAN - 5
K	LITRL - 1
L	LITRL - 11
M	LITRL - 9
N	LITRL - 15
O	COLUMN - 15
P	CONDIT - 15
Q	LOGIC - 100
R	LOGIC - 500
S	LOGIC - 696
T	LOGIC - 305
U	LOGIC - 509
V	LOGIC - 650
W	LOGIC - 600
X	LOGIC - 550
Y	LOGIC - 670
Z	LOGIC - 1000
AA	LOGIC - 695
BB	LOGIC - 690
CC	LOGIC - 2000
DD	LOGIC - the third executable statement after 2010.

```
| EDI FASS.ODL
CPAGE 13
*LI
      .ROOT SUSAN-*BLOCK-*RESCAN-*I
I:    .FCTR WRT-*(SQUASH,*J)
J:    .FCTR SCAN-*(COLUMN,CONDIT,LITRL,*K)
K:    .FCTR LOGIC-*LOGICA
      .END
*ED
[EXIT]
>
```

FLOWCHART OF THE MDMPL ASSEMBLER

SUSAN-MAIN PROGRAM

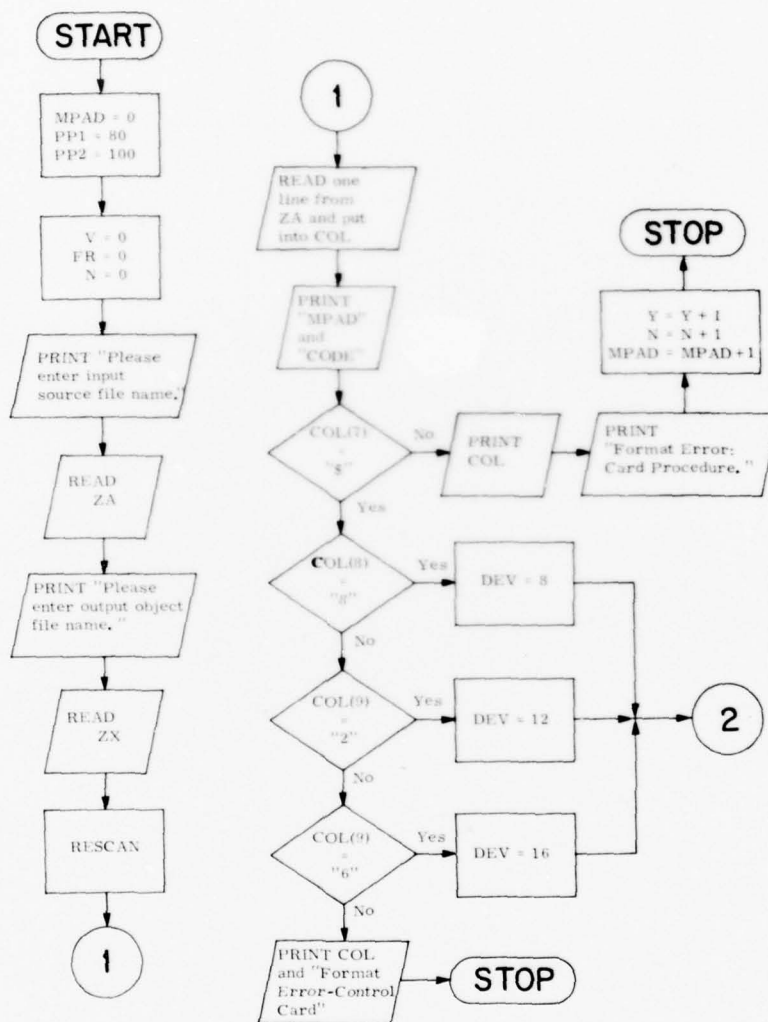


Figure 1-1. SUSAN - Main Program

SUSAN-MAIN PROGRAM (cont.)

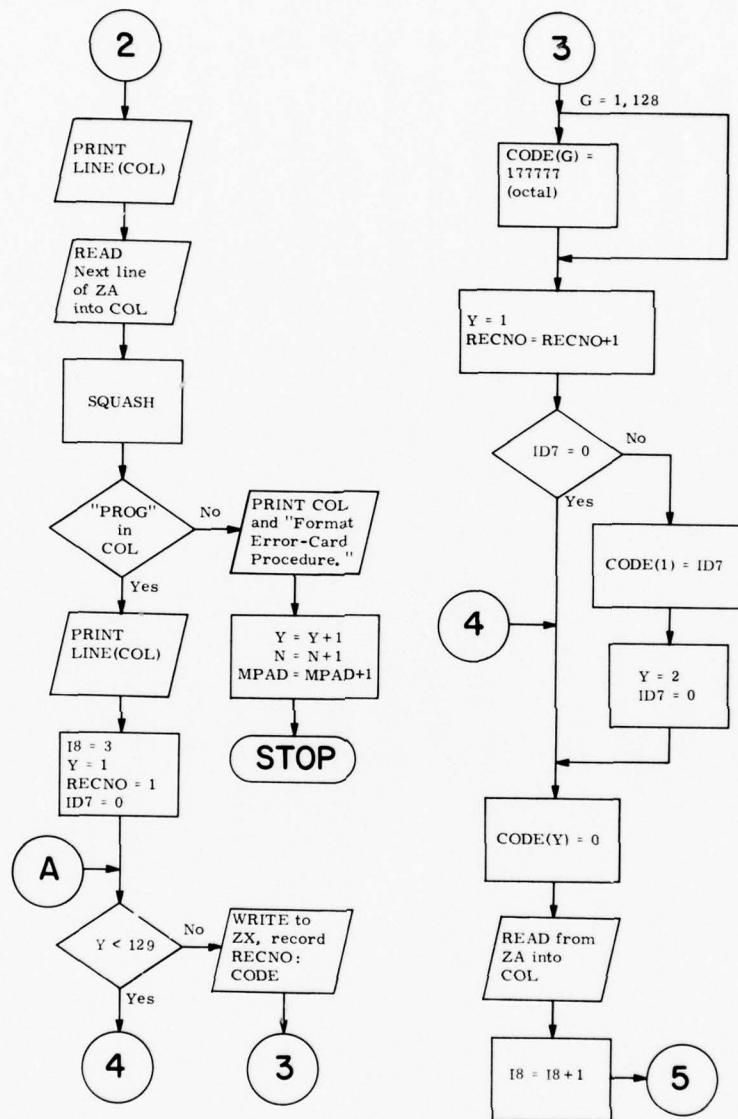


Figure 1-1. (Cont.)

SUSAN-MAIN PROGRAM (cont.)

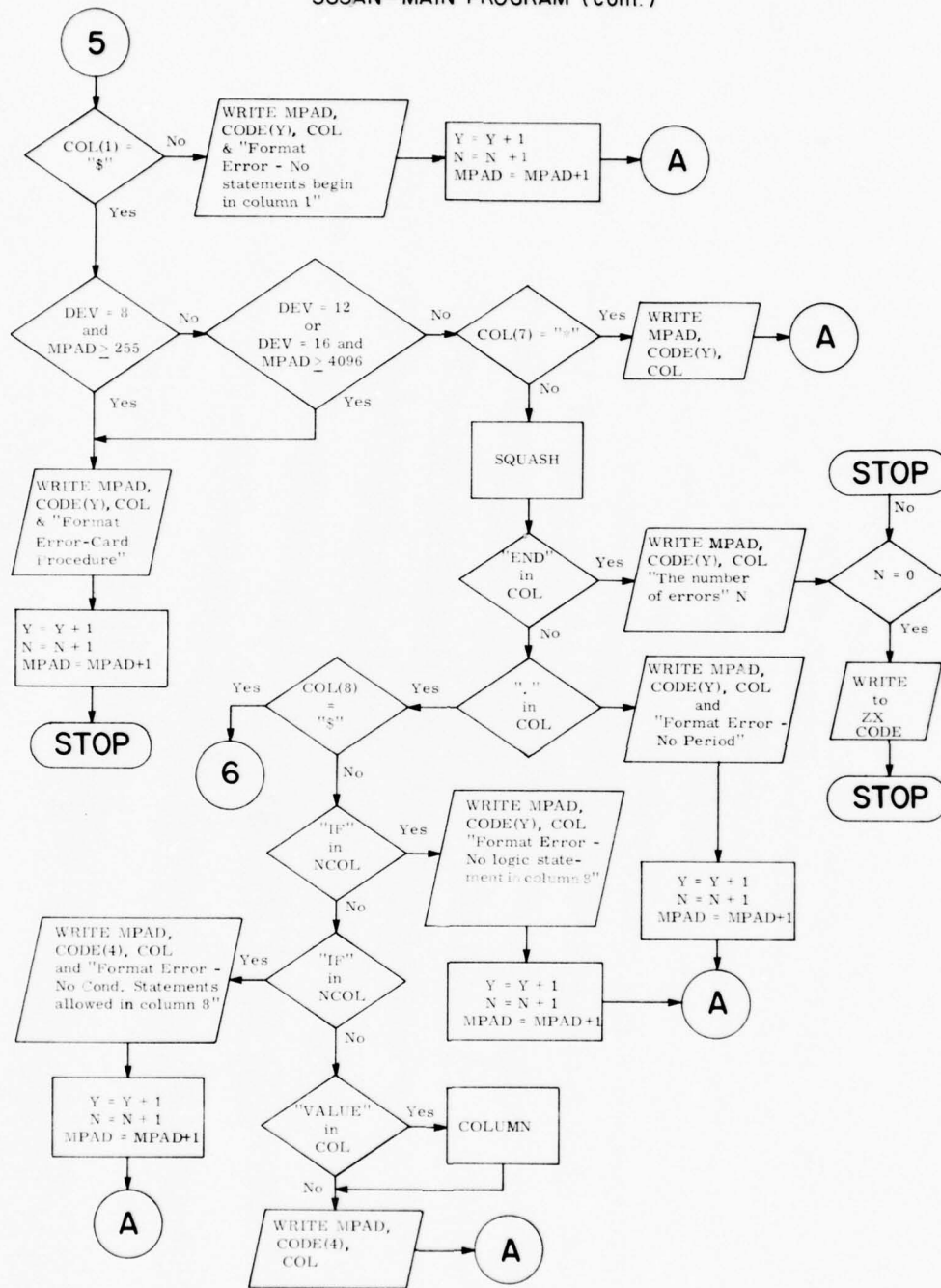


Figure 1-1. (Cont.)

SUSAN-MAIN PROGRAM (cont.)

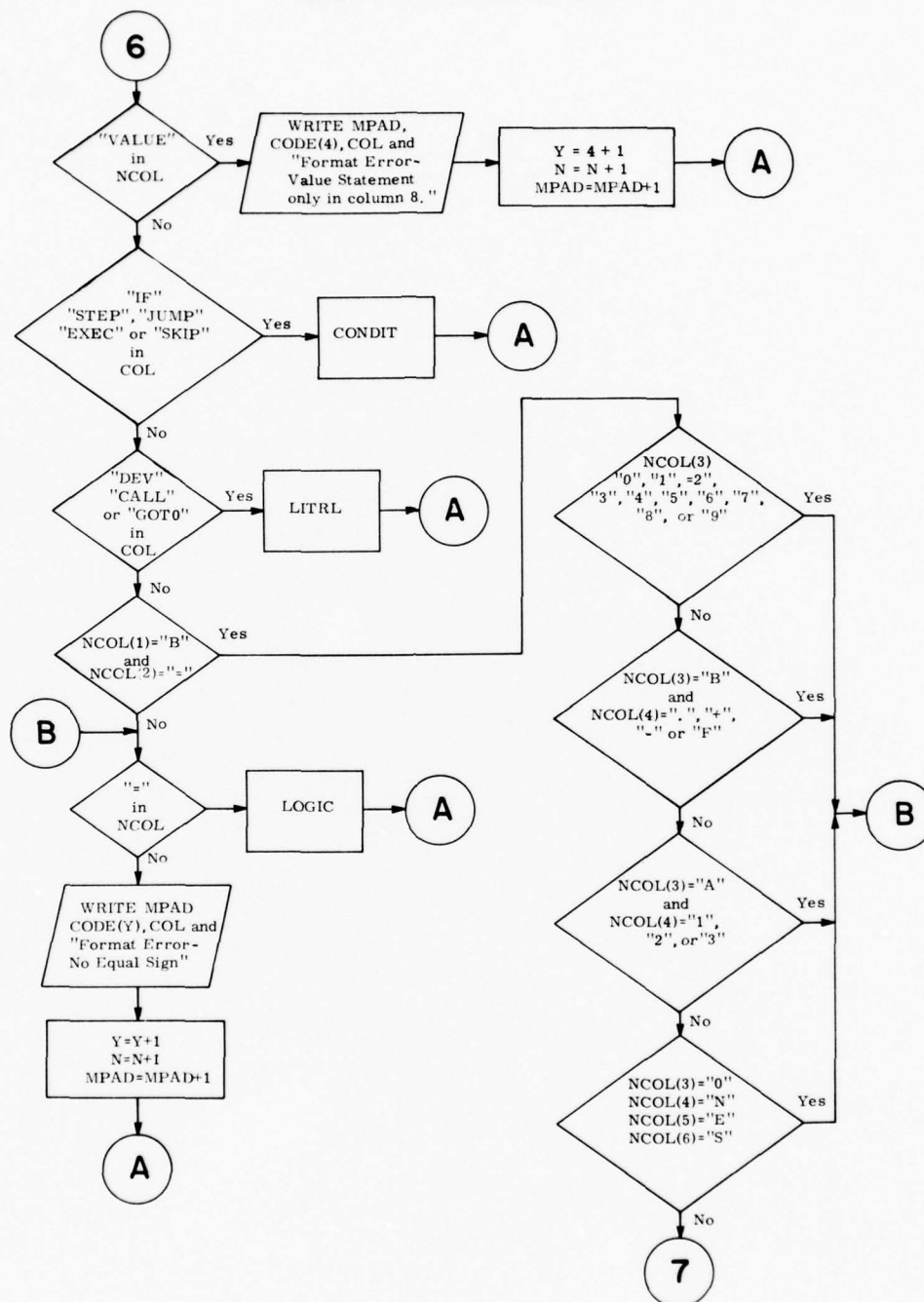


Figure 1-1. (Cont.)

SUSAN-MAIN PROGRAM (cont.)

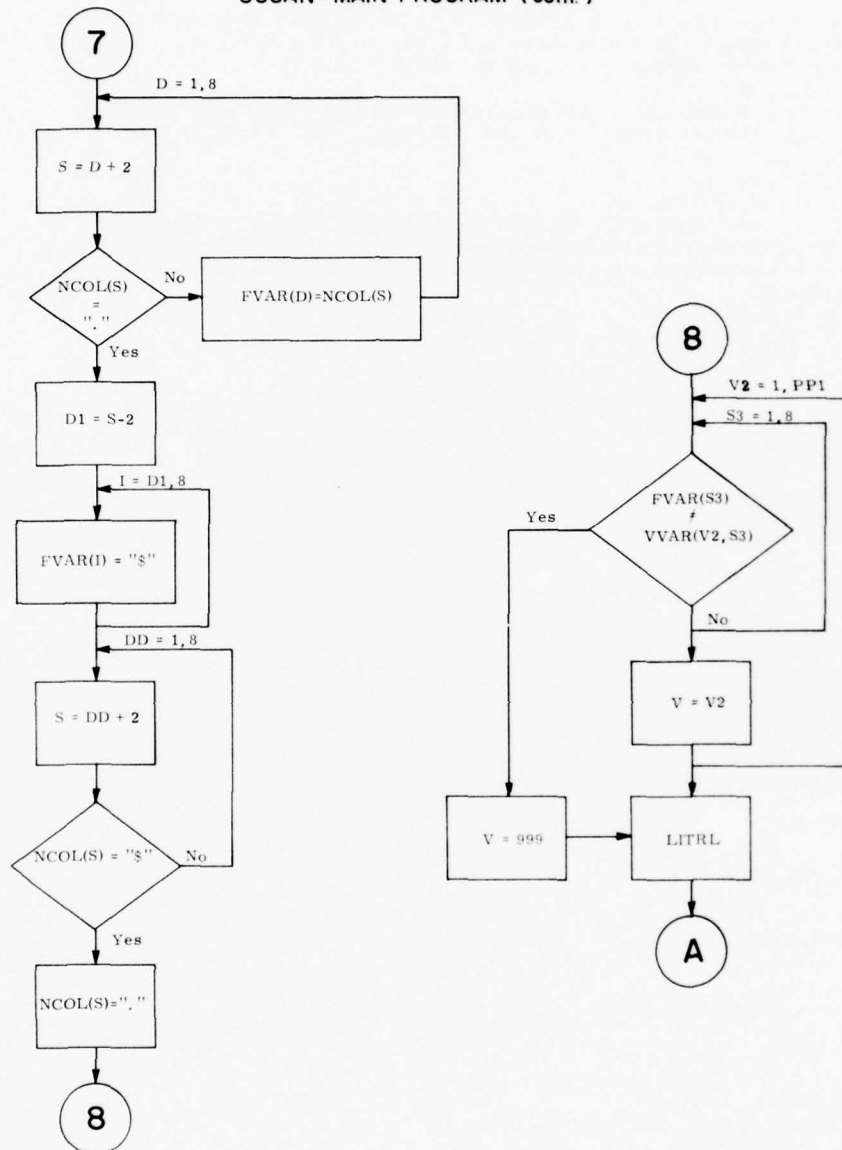


Figure 1-1. (Cont.)

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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SUSAN.OBJ=SUSAN.FOR/NOSN/LI:1

```

C      SUSAN IS THE NAME OF AN ASSEMBLER MAIN PROGRAM DESIGNED TO
C      TRANSLATE MDMPLE INTO B7* MACHINE CODE. THE PROGRAM WILL BE USED
C      ON THE PDP-11 WHICH ONLY HAS A FORTRAN COMPILER.
C
C      BECAUSE THE PROGRAM ONLY USES INTEGERS, ALL VARIABLES EXCEPT
C      THOSE BEGINNING WITH A 'Z' ARE INTEGERS. THE PROGRAM HAS
C      EIGHT SUBPROGRAMS.
0001      IMPLICIT INTEGER (A-Y)
0002      LOGICAL*1 VVAR,FVAR,VAR
0003      LOGICAL*1 NCOL,QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,
1QM,Q,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,QOQ,
2Q1Q,Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,QFR,
3QGR,QHR,COL
0004      COMMON NCOL(30)
0005      COMMON /VAL/VVAR(80,8),VCON(80)
0006      COMMON /PAR/ PP1,PP2
0007      COMMON /SJI/FVAR(8),VAR(100,8),CON(100)
0008      COMMON /IMP/COL(80),CODE(128)
0009      COMMON /VAX/N,MPAD,FR,Y
0010      REAL*8 ZA,ZX
0011      COMMON /FILE/ZA(3),ZX(3),RECNO
0012      COMMON /CODES/QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,
1QM,Q,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,QOQ,Q1Q,
2Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,QFR,QGR,QHR
0013      COMMON /DSK/ V8,V9
0014      COMMON /SULIT/ID7
C      THE NUMBER OF BITS CONTROL CARD IS READ IN FIRST TO DESIGNATE
C      THE NECESSITY FOR A LIT-TO-IR CODE PRECEDING ALL CALL OR GOTO
C      STATEMENTS. THIS OCCURS FOR A 12 OR 16 BIT MACHINE.
C      THIS CARD ALSO STIPULATES THE MAXIMUM NUMBER OF CODES.
C      FOR THE 8 BIT MACHINE,IT IS 256, AND FOR THE 12 OR 16 BIT
C      MACHINE IT IS 4096.
0015      MPAD=0
0016      PP1=80
0017      PP2=100
0018      V=0
0019      FR=0
0020      N=0
0021      CALL ASSIGN(1,'TT1:')
0022      WRITE(1,11)
0023      11 FORMAT(1X,'PLEASE ENTER INPUT SOURCE FILE NAME')
0024      READ(1,12) ZA
0025      12 FORMAT(3A8)
0026      WRITE(1,13)
0027      13 FORMAT(1X,'PLEASE ENTER OUTPUT OBJECT FILE NAME')
0028      READ (1,12) ZX
0029      CALL ASSIGN(2,ZA)
0030      DEFINE FILE 2(3000,40,U,V8)
0031      CALL ASSIGN(3,ZX)
0032      DEFINE FILE 3(32,128,U,V9)
C      FIRST PRESCAN FOR LABEL ADDRESSES.
0033      CALL RESCAN(DEV)
C      NOW RETURN TO PRIMARY SCAN
0034      READ (2'1,ERR=999) COL
C      CREATE HEADINGS
0035      WRITE(1,1)

```

FORTTRAN IV V01B-02
CORE=08K, UIC=[20,20]

SAT 26-FEB-77 17:29:16

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SUSAN.OBJ=SUSAN.FOR/NOSN/LI:1

```

0036 1   FORMAT(' MPAD',SX,'CODE',/)
0037   IF (COL(7) .EQ. QFR) GO TO 5
0039   CALL WRT(0,1)
0040   CALL WRT(10,5)
0041   GO TO 9999
0042 5   IF (COL(8) .NE. Q8Q) GO TO 6
0044   DEV=8
0045   GO TO 10
0046 6   IF (COL(9) .NE. Q2Q) GO TO 7
0048   DEV=12
0049   GO TO 10
0050 7   IF (COL(9) .NE. Q6Q) GO TO 8
0052   DEV=16
0053   GO TO 10
0054 8   CALL WRT(0,1)
0055   CALL WRT(15,5)
0056   GO TO 9999
0057 10  CALL WRT(0,1)
      C   SCAN THE PROGRAM-ID CARD
0058   READ (2'2,ERR=999)COL
      C   SQUASH CREATES NCOL
0059   CALL SQUASH
0060   X=SCAN(5,QPQ,QRQ,QQQ,QGQ,QRQ,P)
0061   IF (X .EQ.1)GO TO 20
0063   CALL WRT(0,1)
0064   CALL WRT(10,5)
0065   GO TO 9999
0066 20  CALL WRT(0,1)
0067   IB=3
0068   Y=1
0069   RECNO=1
0070   ID7=0
      C   Y CORRESPONDS TO THE MPAD VALUE +1
0071 30  CONTINUE
0072   IF (Y .LT. 129) GOTO 300
      C   ELSE WRITE CODE TO DISK
0074   WRITE(3'RECNO)CODE
0075   DO 400 G=1,128
0076 400 CODE(G)='177777
0077   Y=1
0078   RECNO=RECNO+1
0079   IF (ID7 .EQ. 0) GOTO 300
      C   ELSE GOTO OR CALL AT BOUNDARY
0081   CODE(1)=ID7
0082   Y=2
0083   ID7=0
0084 300 CONTINUE
0085   CODE(Y)=0
0086   READ (2'18,ERR=999)COL
0087   IB=IB+1
0088   IF (COL(1) .EQ. QHR) GO TO 32
0090   CALL WRT(43,2)
0091   GO TO 30
0092 32  IF (DEV.EQ.8.AND. MPAD.GE. 255) GO TO 35
0094   IF ((DEV.EQ.12.OR.DEV.EQ.16).AND.MPAD.GE.4096) GO TO 35
0096   GO TO 37

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

SAT 26-FEB-77 17:29:16

PAGE 003

SUSAN.OBJ=SUSAN.FOR/NOSN/LI:1

```
0097 35 CALL WRT(10,2)
0098 GO TO 9999
C IF*, THE CARD IS ONLY WRITTEN
0099 37 IF (COL(7) .NE.QCR) GO TO 50
0101 CALL WRT(0,1)
0102 GO TO 30
0103 50 CALL SQUASH
C CHECK THE $END CARD
0104 IF(NCOL(1).EQ.QEQ.AND.NCOL(2).EQ.QNQ.AND.
1NCOL(3).EQ.QDQ.AND.NCOL(4).EQ.QGR) GO TO 55
0106 GO TO 60
0107 55 CALL WRT(0,1)
0108 CALL WRT(0,3)
0109 IF(N .EQ.0) GO TO 57
0111 GO TO 9999
0112 57 WRITE(3'RECNO) CODE
0113 GO TO 9999
C CHECK FOR A PERIOD
0114 60 X=SCAN(1,QER,0,0,0,0,P)
0115 IF (X .EQ.1) GO TO 70
0117 CALL WRT(0,1)
0118 CALL WRT(17,5)
0119 GO TO 30
C CHECK FOR A VALUE OR LABEL STATEMENT
0120 70 IF (COL(8) .EQ.QHR) GO TO 100
0122 XX=SCAN(1,QDR,0,0,0,0,P)
0123 IF (XX.NE.1) GO TO 80
0125 CALL WRT(37,2)
0126 GO TO 30
0127 80 IF (NCOL(1).NE.QIQ.OR.NCOL(2).NE.QFQ) GO TO 90
0129 CALL WRT(42,2)
0130 GO TO 30
0131 90 G=SCAN(5,QVQ,QAQ,QLQ,QUQ,REQ,P)
0132 IF (G .EQ. 1) CALL COLUMN(V,L)
0134 CALL WRT(0,1)
0135 GO TO 30
C CHECK FOR A CONDITIONAL STATEMENT
0136 100 XL=SCAN(5,QVQ,QAQ,QLQ,QUQ,REQ,P)
0137 IF (XL.NE.1) GO TO 105
0139 CALL WRT(41,2)
0140 GO TO 30
0141 105 F=SCAN(2,QIQ,QFQ,0,0,0,P)
0142 F1=SCAN(4,QSQ,QTQ,REQ,QFQ,0,P)
0143 F2=SCAN(4,QJQ,QUQ,QMQ,QFQ,0,P)
0144 F3=SCAN(4,REQ,QXQ,REQ,QCQ,0,P)
0145 F4=SCAN(4,QSQ,QKQ,RIQ,QFQ,0,P)
0146 IF (F.EQ.1.OR.F1.EQ.1.OR.F2.EQ.1.OR.F3.EQ.1.OR.
1F4.EQ.1) GO TO 110
0148 GO TO 120
0149 110 CALL CONDIT
0150 GO TO 30
0151 120 G=SCAN(3,QDQ,REQ,QVQ,0,0,P)
0152 G1=SCAN(4,QCQ,QAQ,QLQ,QLQ,0,P)
0153 G2=SCAN(4,QGQ,QOQ,QTQ,QOQ,0,P)
0154 IF (G.EQ.1.OR.G1.EQ.1.OR.G2.EQ.1) GO TO 230
0156 IF (NCOL(1) .EQ. QBQ .AND.NCOL(2) .EQ.QDR) GO TO 150
```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

SAT 26-FEB-77 17:29:16

PAGE 004

SUSAN.OBJ=SUSAN.FOR/NOSN/LI:1

```
0158      GO TO 240
0159 150   IF (NCOL(3).EQ.Q0Q.OR.NCOL(3).EQ.Q1Q.OR.NCOL(3).EQ.Q2Q
          1.OR.NCOL(3).EQ.Q3Q.OR.NCOL(3).EQ.Q4Q.OR.NCOL(3).EQ.Q5Q
          2.OR.NCOL(3).EQ.Q6Q.OR.NCOL(3).EQ.Q7Q.OR.NCOL(3).EQ.Q8Q
          3.OR.NCOL(3).EQ.Q9Q) GO TO 240
0161      IF (NCOL(3).EQ.Q8Q.AND.(NCOL(4).EQ.QER.OR.NCOL(4).EQ.QAR
          1.OR.NCOL(4).EQ.QBR.OR.NCOL(4).EQ.QFQ)) GO TO 240
0163      IF (NCOL(3).EQ.QAQ.AND.(NCOL(4).EQ.Q1Q.OR.NCOL(4).EQ.Q2Q
          1.OR.NCOL(4).EQ.Q3Q)) GO TO 240
0165      IF (NCOL(3).EQ.Q0Q.AND.NCOL(4).EQ.QNQ.AND.NCOL(5).EQ.QEQ
          1.AND.NCOL(6).EQ.QSQ) GO TO 240
0167      DO 210 D=1,8
0168      S=D+2
0169      IF (NCOL(S).EQ.QER) GO TO 212
0171 210   FVAR(D)=NCOL(S)
0172 212   D1=S-2
0173      DO 213 I=D1,8
0174 213   FVAR(I)=QHR
0175      DO 215 DD=1,8
0176      S=DD+2
0177      IF (NCOL(S).EQ.QHR) GO TO 217
0179 215   CONTINUE
0180 217   NCOL(S)=QER
0181      DO 225 V2=1,PF1
0182      DO 220 S3=1,8
0183      IF (FVAR(S3).NE.VVAR(V2,S3)) GO TO 225
0185 220   CONTINUE
0186      V=V2
0187      GO TO 230
0188 225   CONTINUE
0189      V=999
0190 230   CALL LITRL(V,DEV)
0191      GO TO 30
          C
0192 240   XV=SCAN(1,QDR,0,0,0,0,P)
0193      IF (XV.EQ. 1) GO TO 250
0195      CALL WRT(36,2)
0196      GO TO 30
0197 250   CALL LOGIC
0198      GO TO 30
0199 999   N=N+1
0200      WRITE (1,998)
0201 998   FORMAT(' ERROR IN A READ STATEMENT')
0202      GO TO 30
0203 9999  STOP
0204      END
```

> 99

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

MON 28-FEB-77 08:59:37

PAGE 001

BLOCK.OBJ=BLOCK.FOR/NOSN/LI:1

```

0001      BLOCK DATA
0002      LOGICAL*1 VVAR,FVAR,VAR
0003      COMMON /VAL/VVAR(80,8),VCON(80)
0004      COMMON /SJI/FVAR(8),VAR(100,8),CON(100)
0005      COMMON /VAX/N,MFAD,FR,Y
0006      LOGICAL*1 NCOL,QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,
1QMQ,QNQ,QQQ,QPQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,ROQ,
2Q1Q,Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,QFR,
3QGR,QHR,COL
0007      COMMON NCOL(30)
0008      COMMON /PAR/PP1,PP2
0009      COMMON /IMP/COL(80),CODE(128)
0010      COMMON /CODES/QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,
1QMQ,QNQ,QQQ,QPQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,ROQ,Q1Q,
2Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,QFR,QGR,QHR
0011      DATA QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,QMQ,QNQ,QQQ,
1QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,ROQ,Q1Q,Q2Q,Q3Q,Q4Q,
2Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,QFR,QGR,QHR/'A','B','C',
3'D','E','F','G','H','I','J','K','L','M','N','O','P','Q','R','S',
4'T','U','V','W','X','Y','Z','0','1','2','3','4','5','6','7','8',
5'9','+','-','*','=','.',',','$','%','?','/'
0012      DIMENSION C(30),DCOL(30),WZ(30),XZ(30)
0013      END

```

FORTRAN IV DIAGNOSTICS

[WARNING] MSG #094 NON-STANDARD STATEMENT ORDERING

```
FOR -- [.MAIN.] ERRORS: 0, WARNINGS: 1
>
```

RESCAN

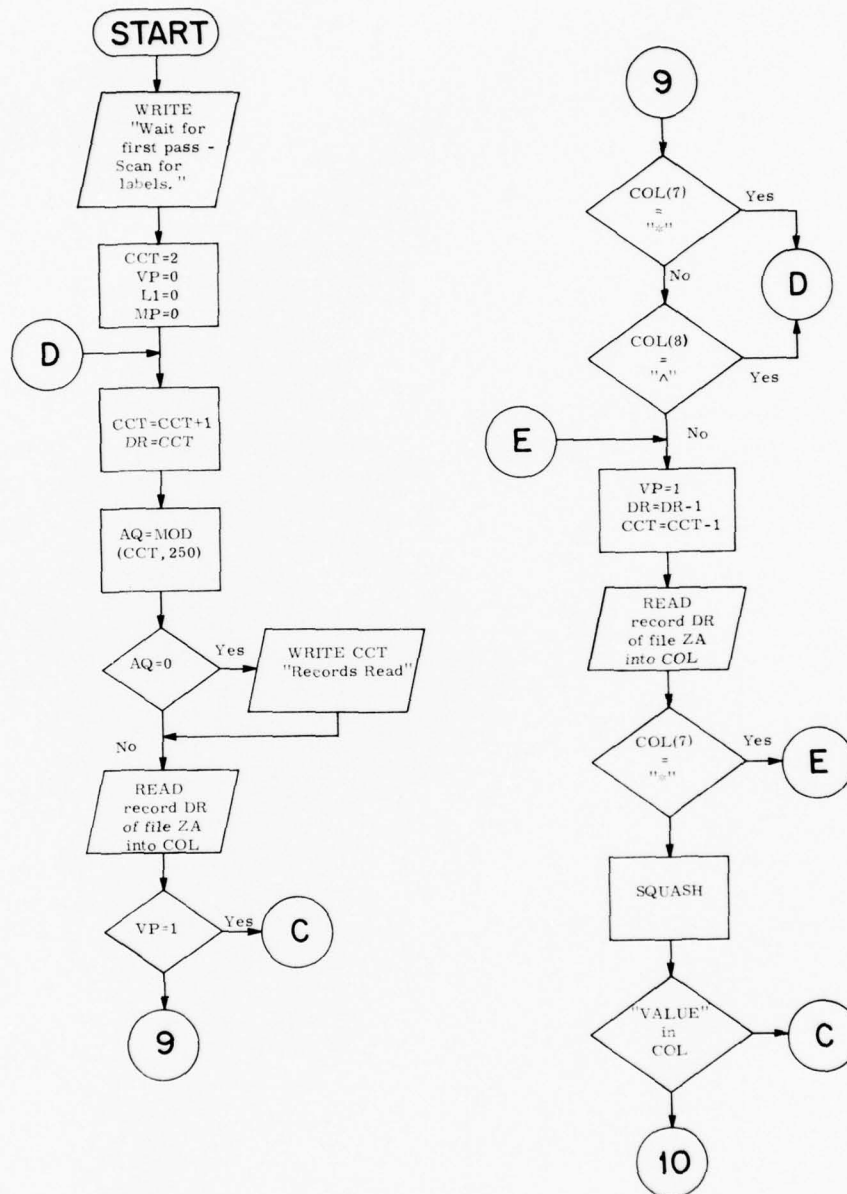


Figure 1-2. RESCAN

RESCAN (cont.)

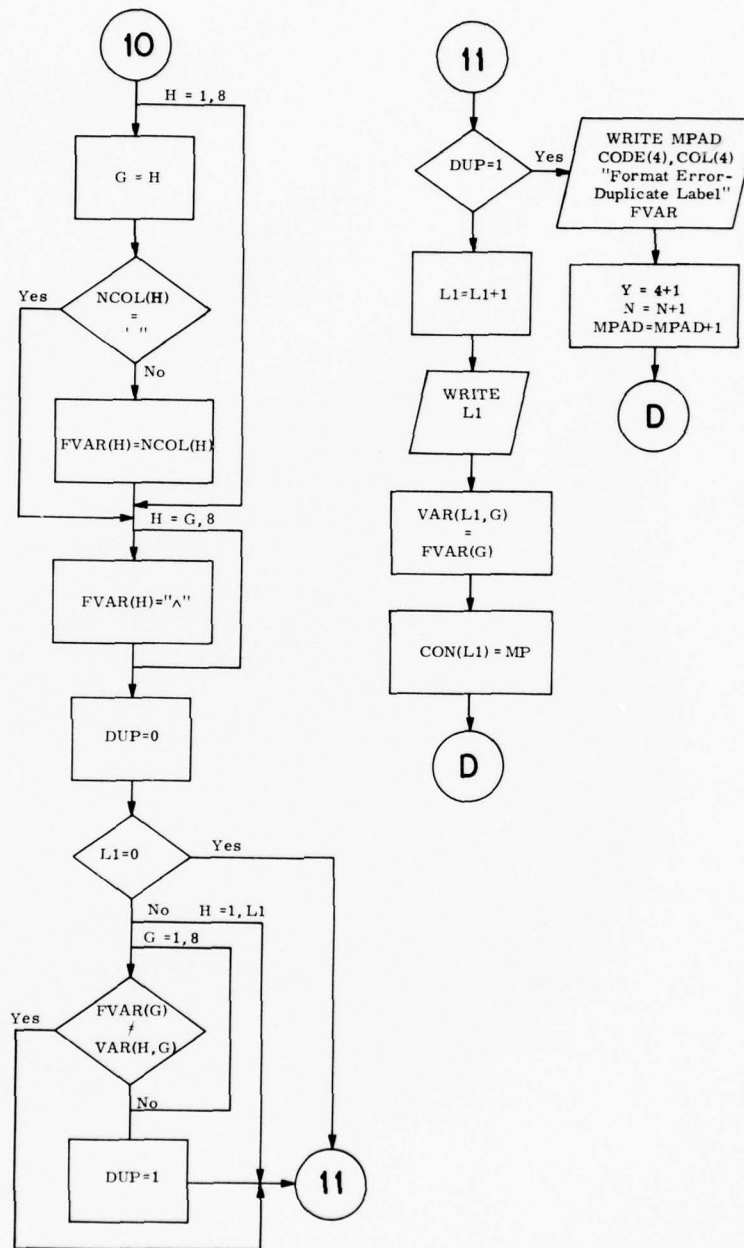


Figure 1-2. (Cont.)

RESCAN (cont.)

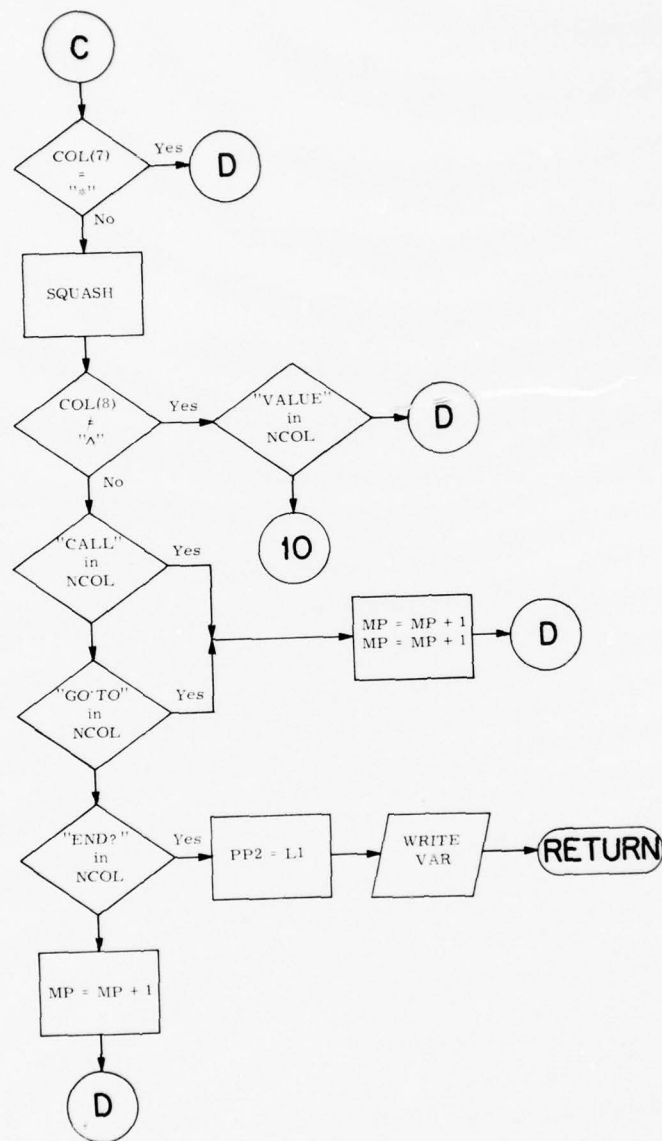


Figure 1-2. (Cont.)

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

MON 28-FEB-77 09:02:05

PAGE 001

RESCAN.OBJ=RESCAN.FOR/NOSN/LI:1

```

0001      SUBROUTINE RESCAN(DEV)
0002      IMPLICIT INTEGER (A-Y)
0003      LOGICAL*1 VVAR,FVAR,VAR
0004      LOGICAL*1 NCOL,COL,RAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,
1QLQ,QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,
2QOQ,Q1Q,Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,
3QFR,QGR,QHR
0005      COMMON NCOL(30)
0006      COMMON /SJI/FVAR(8),VAR(100,8),CON(100)
0007      COMMON /VAL/ VVAR(80,8),VCON(80)
0008      COMMON /IMP/COL(80),CODE(128)
0009      COMMON /VAX/N,MPAD,FR,Y
0010      REAL*8 ZA,ZX
0011      COMMON /FILE/ZA(3),ZX(3),RECND
0012      COMMON /FAR/FP1,FP2
0013      COMMON /CODES/RAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,
1QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,QOQ,Q1Q,
2Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,QFR,QGR,
3QHR
0014      COMMON /DSK/ V8,V9
C      FRESCAN FOR LABELS AND LABEL ADDRESSES.
0015      WRITE(1,43)
0016      43 FORMAT(' WAIT FOR FIRST PASS - SCAN FOR LABELS')
0017      CCT=2
0018      VP=0
0019      LI=0
0020      MP=0
C      READ SOURCE RECORD INTO COL ARRAY
0021      44 CCT=CCT+1
0022      DR=CCT
0023      AQ=MOD(CCT,250)
0024      IF (AQ .EQ. 0) WRITE(1,50) CCT
0026      50 FORMAT(1X,I5,' RECORDS READ')
0027      READ(2'DR,ERR=999) COL
C      TEST FOR END OF VALUE DECLARATIONS
0028      IF (VP .EQ. 1) GO TO 47
C      CHECK FOR COMMENT
0030      IF (COL(7) .EQ. QCR) GO TO 44
0032      IF (COL(8) .NE. QHR) GO TO 44
C      FIRST STATEMENT FOUND. SET VP FLAG
0034      VP=1
C      NOW BACK UP TO FIND POSSIBLE LABEL
0035      48 DR=DR-1
0036      CCT=CCT-1
0037      READ(2'DR,ERR=999) COL
0038      IF (COL(7) .EQ. QCR) GO TO 48
0040      CALL SQUASH
0041      H=SCAN(5,QVQ,QAQ,QLQ,QUQ,QEQ,G)
0042      IF (H .EQ. 1) GO TO 47
C      LABEL AT MPAD=0
C      FOLLOWING MAKES LABEL REFERENCE IN VAR AND CON.
0044      400 DO 403 H=1,8
0045          G=H
0046          IF (NCOL(H) .EQ. QER) GO TO 404
0048      403 FVAR(H)=NCOL(H)
0049      404 DO 410 H=G,8

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

MON 28-FEB-77 09:02:05

PAGE 002

RESCAN.OBJ=RESCAN.FOR/NOSN/LI:1

```

0050   410 FVAR(H)=QHR
0051   DUP=0
      C   TEST FOR DUPLICATE LABEL.
0052   IF (L1 .EQ. 0) GO TO 417
0054   DO 415 H=1,L1
0055   DO 416 G=1,8
0056   416 IF (FVAR(G) .NE. VAR(H,G)) GO TO 415
0058   DUP=1
0059   GO TO 417
0060   415 CONTINUE
0061   417 IF (DUP .EQ.1) GO TO 430
      C   LABEL IS NEW
0063   L1=L1+1
      D   WRITE(1,32) L1
      D   32 FORMAT(1X,'L1= ',I3)
0064   DO 420 G=1,8
0065   420 VAR(L1,G)=FVAR(G)
0066   CON(L1)=MP
0067   GO TO 44
      C   IF LABEL IS DUPLICATED, WRITE ERROR.
0068   430 N=N+1
0069   WRITE(1,431) FVAR
0070   431 FORMAT(' FORMAT ERROR - DUPLICATE LABEL -- ',8A1)
0071   GO TO 44
      C   NOW ADD MPAD VALUES 1 OR 2 TO MP.
      C   ELIMINATE COMMENTS
0072   47 IF (COL(7) .EQ. QCR) GOTO 44
0074   CALL SQUASH
      D   WRITE(1,31)(NCOL(I),I=1,8)
      D   31 FORMAT(1X,'NCOL= ',A8)
      C   FIND LABELS OR VALUES
0075   IF (COL(8) .NE. QHR) GOTO 480
0077   G=SCAN(4,QCQ,QAQ,QLQ,QLQ,0,P)
      C   FIND CALL
0078   IF (G .EQ. 1) GOTO 440
0080   G=SCAN(4,QGQ,QQQ,QTQ,QQQ,0,P)
      C   FIND GOTO
0081   IF (G .EQ. 1) GOTO 440
0083   G=SCAN(4,QEQ,QNQ,QDQ,QGR,0,P)
      C   FIND END
0084   IF (G .EQ. 1) GO TO 490
0086   MP=MP+ 1
0087   GOTO 44
0088   440 MP=MP+1
0089   MP=MP+1
0090   GOTO 44
0091   999 WRITE(1,998)
0092   998 FORMAT(1X,'SOURCE DISK READ ERROR')
0093   480 G=SCAN(5,QVQ,QAQ,QLQ,QUQ,QEQ,P)
0094   IF (G .EQ. 1) GOTO 44
0096   GOTO 400
0097   490 PP2=L1
      D   WRITE(1,30)((VAR(I,J),J=1,8),I=1,PP2)
      D   30 FORMAT(1X,80A1)
0098   RETURN
0099   END

```

SCAN

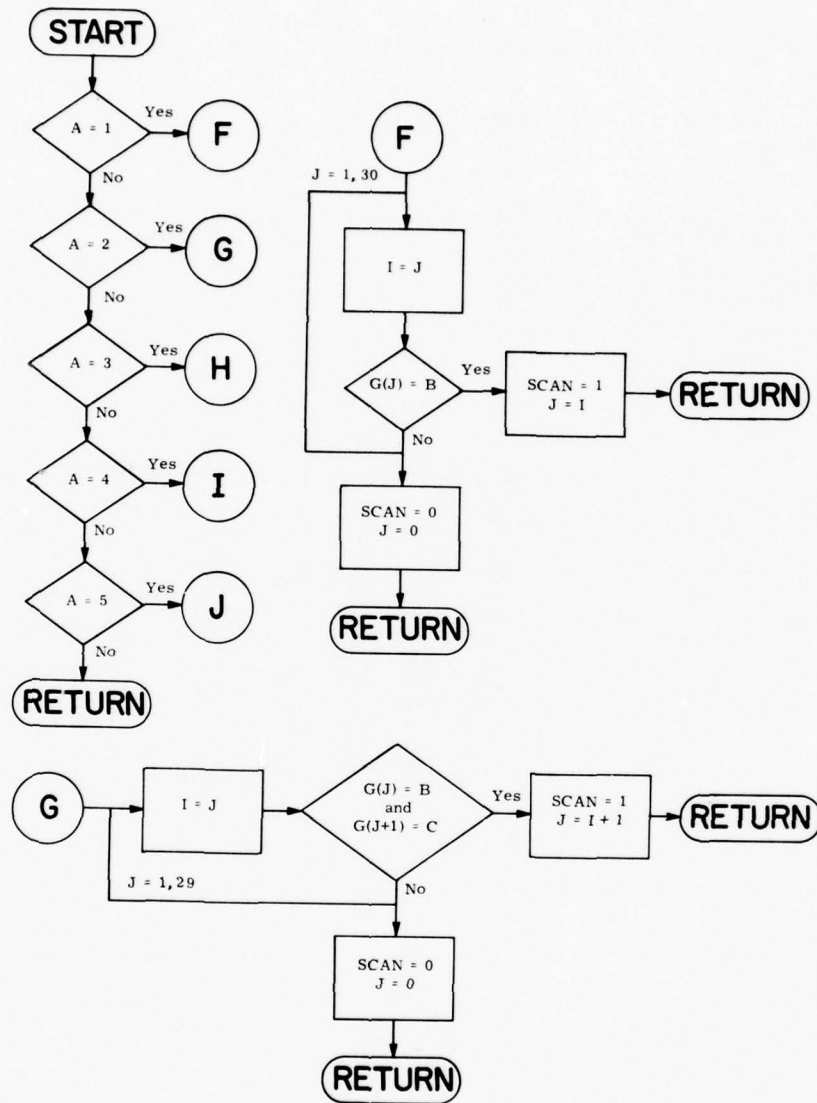


Figure 1-3. SCAN

SCAN (cont.)

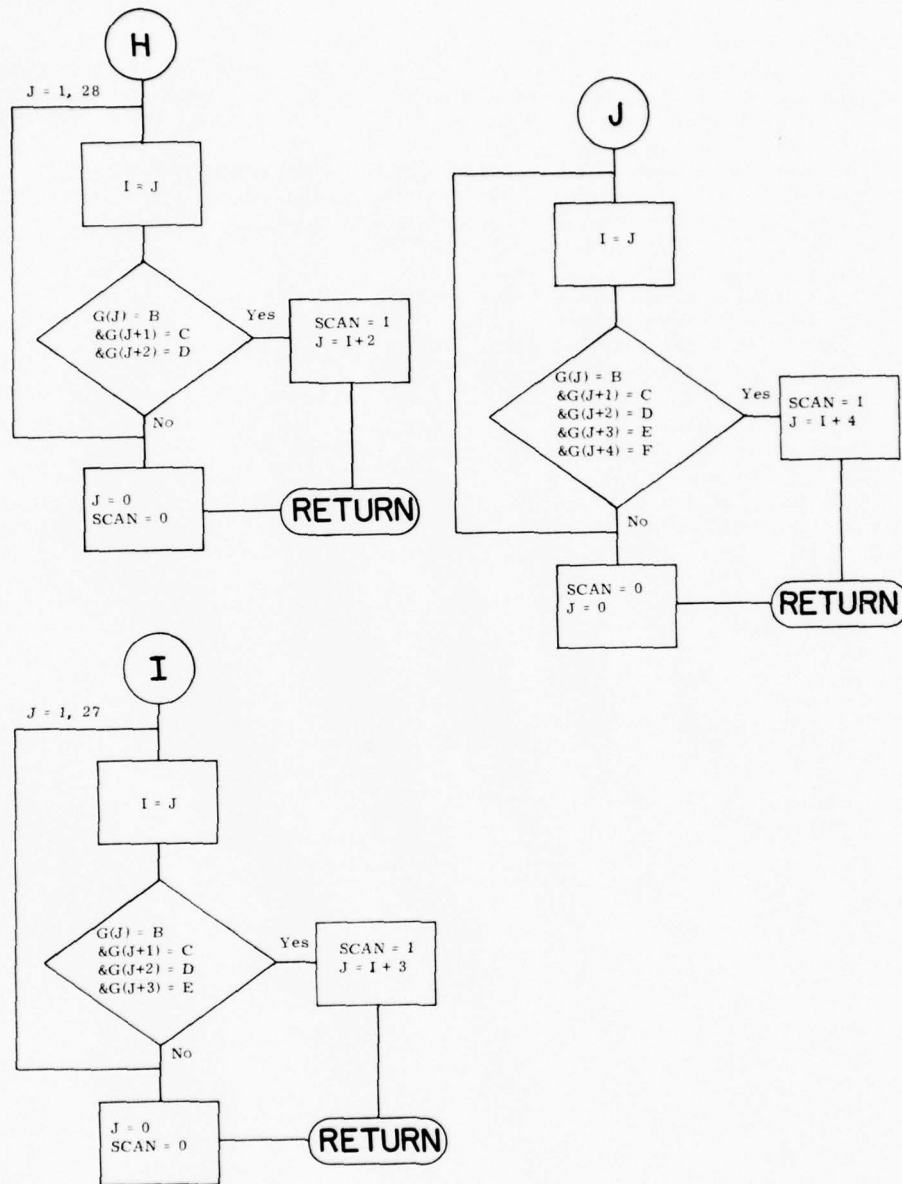


Figure 1-3. (Cont.)

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

WED 22-DEC-76 08:31:37

PAGE 001
SCAN7=SCAN7.FOR/LI:1

```

0001      INTEGER FUNCTION SCAN(A,B,C,D,E,F,J)
          C      SCAN IS USED TO CHECK FOR RESERVED WORDS OF THE MDMPL LANGUAGE
          C      DEPENDING ON THE VALUE OF A,SCAN WILL CHECK FOR A CHARACTERS
          C      IF SCAN COMES BACK WITH A VALUE OF 1,THEN THE TEST WAS SUCCESSFUL
0002      IMPLICIT INTEGER (A-Y)
0003      LOGICAL*1 G,QAQ,QEQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,
1QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,QOQ,Q1Q,
2Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,QFR,QGR,
3QHR,B,C,D,E,F,COL,VVAR,FVAR,VAR
0004      COMMON G(30)
0005      COMMON /VAL/VVAR(80,8),VCON(80)
0006      COMMON /FAR/FF1,FF2
0007      COMMON /SJI/FVAR(8),VAR(100,8),CON(100)
0008      COMMON /IMP/COL(80),CODE(128)
0009      COMMON /VAX/ N,MPAD,FR,Y
0010      REAL*8 ZA,ZX
0011      COMMON /FILE/ZA(3),ZX(3),RECNO
0012      COMMON /DSK/V8,V9
0013      COMMON /CODES/QAQ,QEQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,
1QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,QOQ,Q1Q,
2Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,QFR,QGR,QHR
          D      WRITE (1,60)A,B,C,D,E,F
          D60     FORMAT (1X,'A=',I1,' B=',A1,' C=',A1,' D=',A1,' E=',A1,' F=',A1)
0014      GOTO (1,2,3,4,5) A
0015      RETURN
0016      1      DO 10 J=1,30
0017             I=J
0018             IF (G(J) .EQ. B) GOTO 15
0020      10     CONTINUE
0021             J=0
0022             SCAN=0
0023             RETURN
0024      15     SCAN=1
0025             J=I
0026             RETURN
0027      2      DO 20 J=1,29
0028             I=J
0029             IF (G(J).EQ.B.AND.G(J+1) .EQ. C) GOTO 25
0031      20     CONTINUE
0032             J=0
0033             SCAN=0
0034             RETURN
0035      25     SCAN=1
0036             J=I+1
0037             RETURN
0038      3      DO 30 J=1,28
0039             I=J
0040             IF (G(J).EQ.B.AND.G(J+1).EQ.C.AND.G(J+2).EQ.D) GOTO 35
0042      30     CONTINUE
0043             J=0
0044             SCAN=0
0045             RETURN
0046      35     SCAN=1
0047             J=I+2
0048             RETURN
0049      4      DO 40 J=1,27

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

WED 22-DEC-76 08:31:37

PAGE 002

SCAN7=SCAN7.FOR/LI:1

```
0050      I=J
0051      IF (G(J).EQ.B.AND.G(J+1).EQ.C.AND.G(J+2).EQ.D.AND.G(J+3).EQ.E)
1GOTO 45
0053  40    CONTINUE
0054      J=0
0055      SCAN=0
0056      RETURN
0057  45    SCAN=1
0058      J=I+3
0059      RETURN
0060  5     DO 50 J=1,26
0061      I=J
0062      IF (G(J).EQ.B.AND.G(J+1).EQ.C.AND.G(J+2).EQ.D.AND.G(J+3).EQ.E
1.AND.G(J+4).EQ.F) GOTO 55
0064  50    CONTINUE
0065      J=0
0066      SCAN=0
0067      RETURN
0068  55    SCAN=1
0069      J=I+4
0070      RETURN
0071      END
```

FOR>

FORTRAN IV V01B-02
CORE=08K, UIC=L20,201

MON 28-FEB-77 09:05:44

PAGE 001

WRT.OBJ=WRT.FOR/NDSN/LI:1

```

0001      SUBROUTINE WRT(VARF,PCK)
0002      IMPLICIT INTEGER (A-D)
0003      IMPLICIT INTEGER (G-Y)
0004      LOGICAL*1 COL,NCOL,QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,
1QLQ,QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,
2QOQ,Q1Q,Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,
3QER,QFR,QGR,QHR
0005      LOGICAL*1 VVAR,FVAR,VAR
0006      COMMON /IMP/COL(80),CODE(128)
0007      COMMON NCOL(30)
0008      COMMON /VAL/ VVAR(80,8),VCON(80)
0009      COMMON /PAR/PP1,PP2
0010      COMMON /SJI/ FVAR(8),VAR(100,8),CON(100)
0011      REAL*8 ZA,ZX
0012      COMMON /FILE/ZA(3),ZX(3),RECNO
0013      COMMON /CODES/QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,
1QM,Q,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,QOQ,Q1Q,
2Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,QFR,QGR,QHR
0014      COMMON /VAX/N,MPAD,FR,Y
0015      COMMON /DSK/ V8,V9
0016      GO TO (1,2,3,4,5) ,PCK
0017      C      WRITE CARD ONLY
0018      1      WRITE (1,9)(COL(I),I=1,80)
0019      9      FORMAT(20X,80A1)
0019      RETURN
0020      C      WRITE ADDRESS, CODE, CARD AND ERROR MESSAGE
0020      2      CODE(Y)=32767
0021      WRITE (1,6)MPAD, CODE(Y), (COL(I),I=1,80)
0022      6      FORMAT(1X,05,4X,05,5X,80A1)
0022      C      PRINT ERRORS CORRESPONDING TO VARF
0023      N=N+1
0024      MPAD=MPAD+1
0025      Y=Y+1
0026      5      IF (VARF .NE. 10) GO TO 12
0028      WRITE (1,11)
0029      11      FORMAT(' FORMAT ERROR-CARD PROCEDURE' )
0030      RETURN
0031      12      IF (VARF .NE.15) GO TO 50
0033      WRITE (1,13)
0034      13      FORMAT(' FORMAT ERROR-CONTROL CARD' )
0035      RETURN
0036      50      IF (VARF .NE. 16) GO TO 60
0038      WRITE (1,55)
0039      55      FORMAT(' FORMAT ERROR-OVERFLOW' )
0040      RETURN
0041      60      IF (VARF .NE. 17) GO TO 70
0043      WRITE (1,65)
0044      65      FORMAT (' FORMAT ERROR- NO PERIOD' )
0045      RETURN
0046      70      IF (VARF .NE. 18) GO TO 80
0048      WRITE (1,75)
0049      75      FORMAT(' FORMAT ERROR- MISCELLANEOUS' )
0050      RETURN
0051      80      IF (VARF .NE. 19) GO TO 87
0053      WRITE (1,85)
0054      85      FORMAT (' FORMAT ERROR- NO CONDITION SELECT' )

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

MON 28-FEB-77 09:05:44

PAGE 002
WRT.OBJ=WRT.FOR/NOSN/LI:1

```
0055      RETURN
0056 87    IF (VARF .NE. 20) GO TO 90
0058      WRITE (1,88)
0059 88    FORMAT(' FORMAT ERROR-INVALID CHARACTER' )
0060      RETURN
0061 90    IF (VARF .NE. 21) GO TO 100
0063      WRITE (1,95)
0064 95    FORMAT(' FORMAT ERROR- NO TRUE SUCCESSOR' )
0065      RETURN
0066 100   IF (VARF .NE. 23) GO TO 110
0068      WRITE (1,105)
0069 105   FORMAT(' FORMAT ERROR- UNDEFINED VALUE CONSTANT' )
0070      RETURN
0071 110   IF (VARF .NE. 24) GO TO 120
0073      WRITE (1,115)
0074 115   FORMAT (' FORMAT ERROR- MISSING DIGIT AFTER DEV' )
0075      RETURN
0076 120   IF (VARF .NE. 25) GO TO 130
0078      WRITE (1,125)
0079 125   FORMAT (' FORMAT ERROR- MISSING DIGIT AFTER LC' )
0080      RETURN
0081 130   IF (VARF .NE. 26) GO TO 140
0083      WRITE (1,135)
0084 135   FORMAT (' FORMAT ERROR- MISSING DIGIT AFTER BEX' )
0085      RETURN
0086 140   IF (VARF .NE. 31) GO TO 150
0088      WRITE (1,145)
0089 145   FORMAT(' FORMAT ERROR- MISSING DIGIT AFTER OUT' )
0090      RETURN
0091 150   IF (VARF .NE. 32) GO TO 160
0093      WRITE (1,155)
0094 155   FORMAT(' FORMAT ERROR- NO DESTINATION SELECT' )
0095      RETURN
0096 160   IF (VARF .NE. 33) GO TO 170
0098      WRITE (1,165)
0099 165   FORMAT (' FORMAT ERROR- MISSING DIGIT AFTER A' )
0100      RETURN
0101 170   IF (VARF .NE. 34) GO TO 180
0103      WRITE (1,175)
0104 175   FORMAT (' FORMAT ERROR- UNDEFINED SEMANTICS' )
0105      RETURN
0106 180   IF (VARF .NE. 35) GO TO 186
0108      WRITE (1,185)
0109 185   FORMAT (' FORMAT ERROR- UNDEFINED OPERATION' )
0110      RETURN
0111 186   IF (VARF .NE. 36) GO TO 188
0113      WRITE(1,187)
0114 187   FORMAT (' FORMAT ERROR- NO EQUAL SIGN' )
0115      RETURN
0116 188   IF (VARF .NE. 37) GO TO 190
0118      WRITE (1,189)
0119 189   FORMAT(' FORMAT ERROR- NO LOGIC STATEMENT IN COLUMN 8' )
0120      RETURN
0121 190   IF (VARF .NE. 40) GO TO 196
0123      WRITE (1,195)
0124 195   FORMAT (' FORMAT ERROR- VALUE CONSTANT OVERFLOW' )
```

FORTRAN IV V01B-02
CORE=08K, UIC=C20,20J

MON 28-FEB-77 09:05:44

PAGE 003

WRT.OBJ=WRT.FOR/NOSN/LI:1

```
0125      RETURN
0126 196    IF (VARF .NE. 41) GO TO 198
0128      WRITE (1,197)
0129 197    FORMAT(' FORMAT ERROR- VALUE STATEMENT ONLY IN COLUMN 8' )
0130      RETURN
0131 198    IF (VARF .NE. 42) GO TO 220
0133      WRITE (1,199)
0134 199    FORMAT(' FORMAT ERROR- NO CONDITION STATEMENTS IN COLUMN 8' )
0135      RETURN
0136 220    IF (VARF .NE. 43) GO TO 200
0138      WRITE (1,225)
0139 225    FORMAT(' FORMAT ERROR- NO STATEMENTS BEGIN IN COLUMN 1' )
0140      RETURN
0141 200    IF (VARF .NE. 45) GO TO 210
0143      WRITE (1,205)
0144 205    FORMAT(' FORMAT ERROR- NO FALSE SUCCESSOR' )
0145      RETURN
0146 210    WRITE(1,250)VARF
0147 250    FORMAT(1X,016,' IS NOT A VALID NUMBER FOR VARF' )
0148      RETURN
0149      C    LAST WRITE-WRITE THE NUMBER OF ERRORS
0150      3    WRITE (1,7)N
0151      7    FORMAT(' THE NUMBER OF ERRORS=' ,I2)
0152      C    WRITE THE ADDRESS AND CODE WITH THE CARD
0153      4    WRITE (1,8)MPAD,CODE(Y),(COL(I),I=1,80)
0154      8    FORMAT (1X,05,4X,05,5X,80A1)
0155      MPAD=MPAD+1
0156      Y=Y+1
0157      RETURN
0158      END
```

>

SQUASH

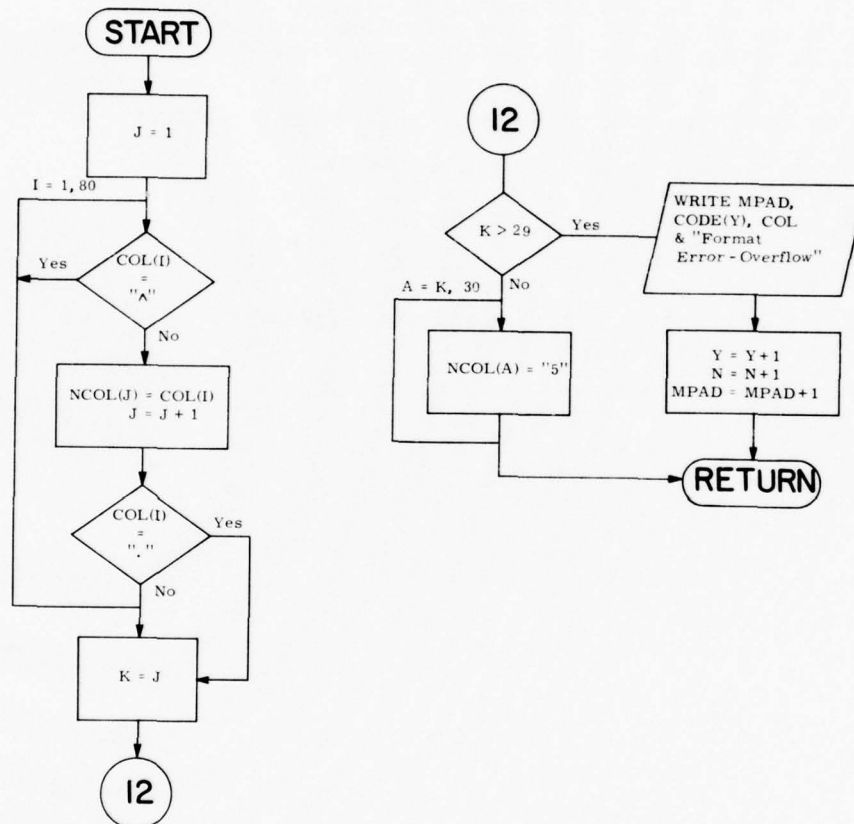


Figure 1-4. SQUASH

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

MON 28-FEB-77 09:10:49

PAGE 001

SQUASH.OBJ=SQUASH.FOR/NOSN/LI:1

```
0001      SUBROUTINE SQUASH
0002      IMPLICIT INTEGER (A-Y)
0003      LOGICAL*1 COL,NCOL,QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,
1QLQ,QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,
2QOQ,Q1Q,Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,
3QFR,QGR,QHR
0004      COMMON NCOL(30)
0005      COMMON /IMP/COL(80),CODE(128)
0006      COMMON /CODES/QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,
1QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,QOQ,Q1Q,
2Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,QFR,QGR,QHR
0007      J=1
0008      DO 20 I=1,80
0009      C      THIS CHECKS FOR A SPACE,IF THERE IS ONE, IT WILL IGNORE IT
0009      IF (COL(I).EQ.QHR) GOTO 20
0009      C      THIS ASSIGNS THE CHARACTER TO THE NEW ARRAY
0011      NCOL(J)=COL(I)
0012      J=J+1
0012      C      EVERYTHING AFTER A PERIOD IS IGNORED
0013      IF (COL(I).EQ.QER) GOTO 30
0015      20      CONTINUE
0016      30      K=J
0016      C      THIS IS A CHECK TO SEE THAT THE STATEMENT BEFORE
0016      C      THE PERIOD IS NOT TOO LONG
0017      IF(K.GT.29)GOTO 60
0017      C      THIS IGNORES EVERYTHING AFTER THE FIRST PERIOD
0019      DO 50 A=K,30
0020      50      NCOL(A)=QHR
0021      RETURN
0022      60      CALL WRT(16,2)
0023      RETURN
0024      END
```

>

COLUMN

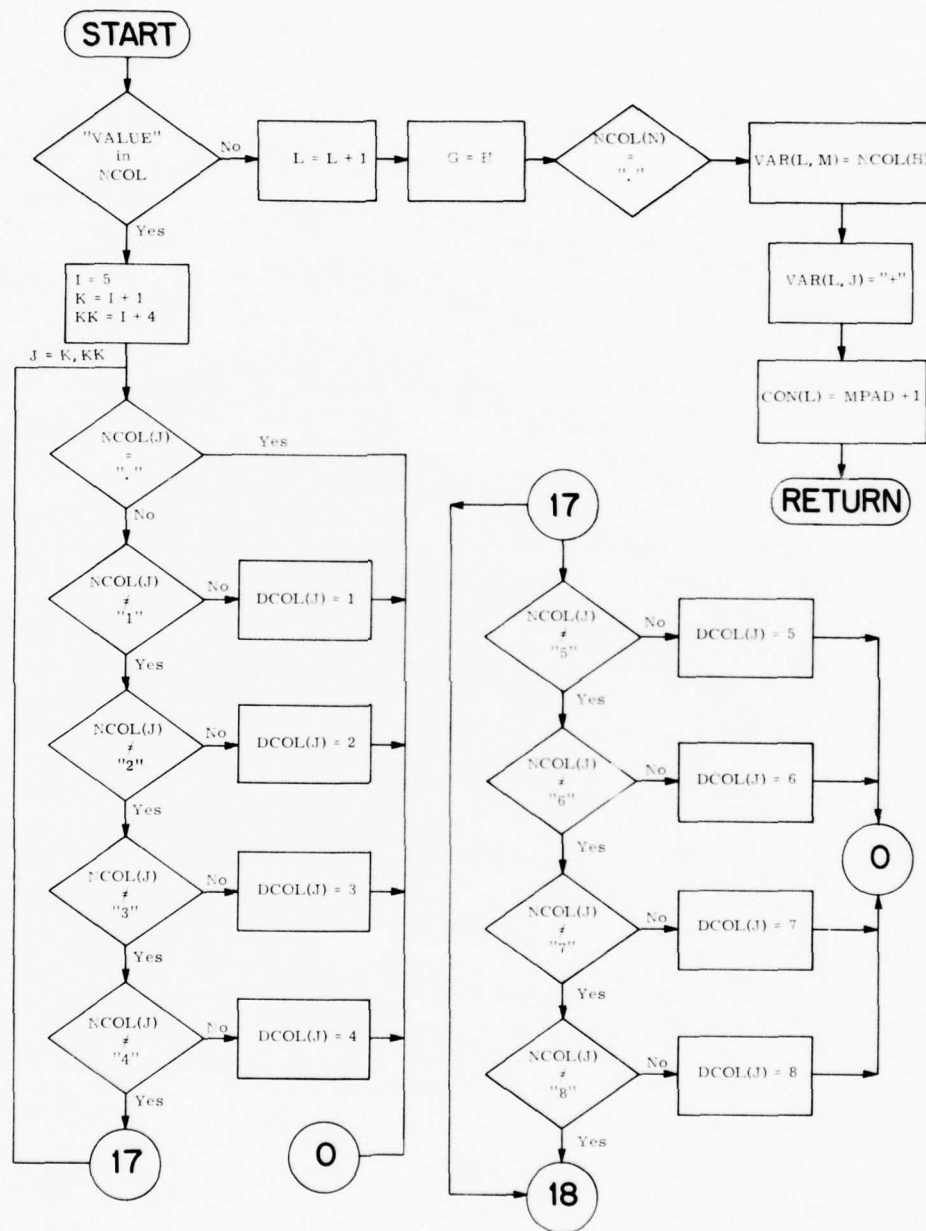


Figure 1-5. COLUMN

COLUMN (cont.)

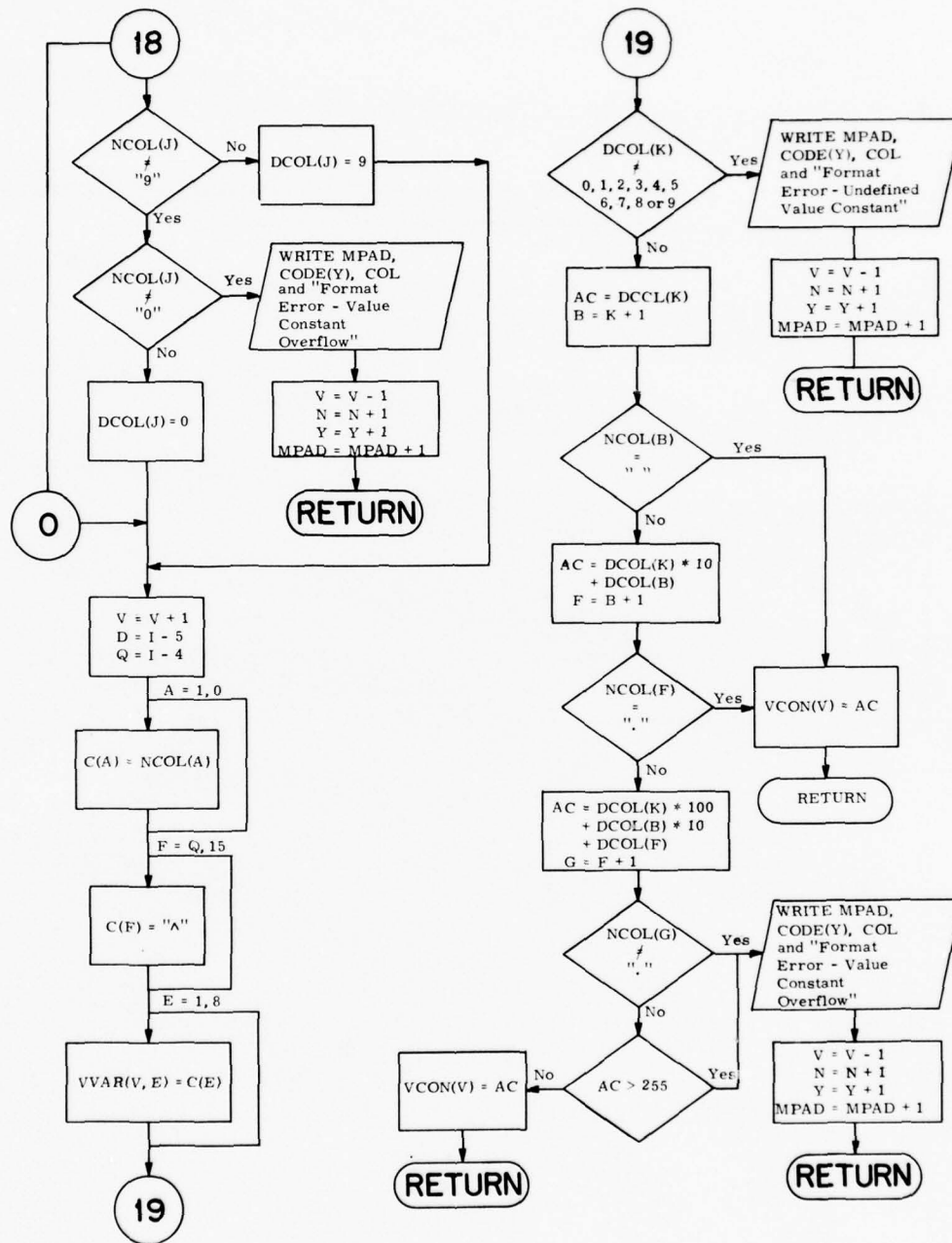


Figure 1-5. (Cont.)

FORTTRAN IV V01B-02
CORE=08K, UIC=[20,20]

MON 28-FEB-77 09:13:00

PAGE 001

COLUMN.OBJ=COLUMN.FOR/NOSN/LI:1

```

0001      SUBROUTINE COLUMN(V,L)
0002      IMPLICIT INTEGER (A-Y)
0003      LOGICAL*1 VVAR,FVAR,VAR,C
0004      LOGICAL*1 COL,NCOL,QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,
1QLQ,QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,
2QOQ,Q1Q,Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,
3QFR,QGR,QHR
0005      COMMON NCOL(30)
0006      COMMON /VAL/ VVAR(80,8),VCON(80)
0007      COMMON /SJI/ FVAR(8),VAR(100,8),CON(100)
0008      COMMON /IMP/ COL(80),CODE(128)
0009      COMMON /VAX/N,MFAD,FR,Y
0010      COMMON /CODES/QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,
1QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,QOQ,Q1Q,
2Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,QFR,QGR,QHR
0011      DIMENSION C(15),DCOL(30)
0012      C      CHECK TO SEE IF IT IS A VALUE STATEMENT
0013      X=SCAN(5,QVQ,QAQ,QLQ,QUQ,QEQ,I)
0015      C      IF (X.EQ. 0) GOTO 70
0016      CHANGE FROM HOLLERITH TO DECIMAL
0017      K=I+1
0018      KK=I+4
0019      DO 15 J=K,KK
0020      IF (NCOL(J).EQ.QER) GOTO 16
0021      IF (NCOL(J).NE. Q1Q) GOTO 6
0022      DCOL(J)=1
0023      GOTO 15
0024      6      IF (NCOL(J).NE.Q2Q) GOTO 7
0025      DCOL(J)=2
0026      GOTO 15
0027      7      IF (NCOL(J).NE. Q3Q) GOTO 8
0028      DCOL(J)=3
0029      GOTO 15
0030      8      IF (NCOL(J).NE. Q4Q) GOTO 9
0031      DCOL(J)=4
0032      GOTO 15
0033      9      IF (NCOL(J).NE. Q5Q) GOTO 11
0034      DCOL(J)=5
0035      GOTO 15
0036      11     IF (NCOL(J).NE. Q6Q) GOTO 12
0037      DCOL(J)=6
0038      GOTO 15
0039      12     IF (NCOL(J).NE.Q7Q) GOTO 13
0040      DCOL(J)=7
0041      GOTO 15
0042      13     IF (NCOL(J).NE. Q8Q) GOTO 14
0043      DCOL(J)=8
0044      GOTO 15
0045      14     IF (NCOL(J).NE. Q9Q) GOTO 17
0046      DCOL(J)=9
0047      GOTO 15
0048      17     IF (NCOL(J).NE.QOQ) GOTO 60
0049      DCOL(J)=0
0050      CONTINUE
0051      C      ADVANCE LOOP NUMBER BY 1
0052      V=V+1
0053      16
0054      15
0055      14
0056      13
0057      12
0058      11
0059      10
0060      9
0061      8
0062      7
0063      6
0064      5
0065      4
0066      3
0067      2
0068      1
0069      0
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0856      0
0857      0
0858      0
0859      0
0860      0
0861      0
0862      0
0863      0
0864      0
0865      0
0866      0
0867      0
0868      0
0869      0
0870      0
0871      0
0872      0
0873      0
0874      0
0875      0
0876      0
0877      0
0878      0
0879      0
0880      0
0881      0
0882      0
0883      0
0884      0
0885      0
0886      0
0887      0
0888      0
0889      0
0890      0
0891      0
0892      0
0893      0
0894      0
0895      0
0896      0
0897      0
0898      0
0899      0
0900      0
0901      0
0902      0
0903      0
0904      0
0905      0
0906      0
0907      0
0908      0
0909      0
0910      0
0911      0
0912      0
0913      0
0914      0
0915      0
0916      0
0917      0
0918      0
0919      0
0920      0
0921      0
0922      0
0923      0
0924      0
0925      0
0926      0
0927      0
0928      0
0929      0
0930      0
0931      0
0932      0
0933      0
0934      0
0935      0
0936      0
0937      0
0938      0
0939      0
0940      0
0941      0
0942      0
0943      0
0944      0
0945      0
0946      0
0947      0
0948      0
0949      0
0950      0
0951      0
0952      0
0953      0
0954      0
0955      0
0956      0
0957      0
0958      0
0959      0
0960      0
0961      0
0962      0
0963      0
0964      0
0965      0
0966      0
0967      0
0968      0
0969      0
0970      0
0971      0
0972      0
0973      0
0974      0
0975      0
0976      0
0977      0
0978      0
0979      0
0980      0
0981      0
0982      0
0983      0
0984      0
0985      0
0986      0
0987      0
0988      0
0989      0
0990      0
0991      0
0992      0
0993      0
0994      0
0995      0
0996      0
0997      0
0998      0
0999      0
1000      0

```


FORTRAN IV V01B-02
CORE=08K, UIC=L20,20J

MON 28-FEB-77 09:13:00

PAGE 002

COLUMN.OBJ=COLUMN.FOR/NOSN/LI:1

```

      C      FIND VARIABLE BEFORE VALUE STATEMENT
0061      D=I-5
0062      Q=I-4
0063      DO 10 A=1,D
0064 10     C(A)=NCOL(A)
0065      DO 20 F=Q,15
0066 20     C(F)=QHR
0067      DO 30 E=1,8
0068 30     VVAR(V,E)=C(E)
      D      WRITE (1,31)(VVAR(V,E),E=1,8)
      D31    FORMAT (' VVAR=',A8)
      C      FIND CONSTANT AFTER VALUE STATEMENT
0069      IF(DCOL(K).NE.0.AND.DCOL(K).NE.1.AND.DCOL(K).NE.2.AND.DCOL(K).NE.3
1.AND.DCOL(K).NE.4.AND.DCOL(K).NE.5.AND.DCOL(K).NE.6.AND.DCOL(K)
2.NE.7.AND.DCOL(K).NE.8.AND.DCOL(K).NE.9)GOTO 50
0071      AC=DCOL(K)
0072      B=K+1
0073      IF (NCOL(B).EQ. QER) GOTO 40
0075      AC=DCOL(K)*10+DCOL(B)
0076      F=B+1
0077      IF (NCOL(F).EQ.QER) GOTO 40
0079      AC=DCOL(K)*100+DCOL(B)+DCOL(F)
0080      G=F+1
      C      THESE ARE OVERFLOW CHECKS
0081      IF (NCOL(G).NE.QER)GOTO 60
0083      IF (AC.GT.255) GOTO 60
      C      THIS WILL ASSIGN THE CONSTANT TO THE PROPER ARRAY
0085 40     VCON(V)=AC
      C      THIS WILL WRITE THE CARD
0086      RETURN
      C      THIS WILL WRITE THE OVERFLOW ERROR CHECKED FOR ABOVE
0087 50     CALL WRT(0,1)
0088      CALL WRT(23,5)
      C      BECAUSE OF AN ERROR,THE VALUE LOOP NUMBER IS SUBTRACTED BY 1
0089      V=V-1
0090      RETURN
0091 60     CALL WRT(0,1)
0092      CALL WRT(40,5)
0093      V=V-1
0094      RETURN
      C      THIS IS THE LABEL LOOP NUMBER ADDER
0095 70     L=L+1
      C      THIS WILL ASSIGN THE VARIABLE INTO THE PROPER ARRAY
0096      DO 80 H=1,8
0097      G=H
0098      IF (NCOL(H).EQ. QER) GOTO 83
0100 80     VAR(L,H)=NCOL(H)
0101 83     DO 84 J=G,8
0102 84     VAR(L,J)=QHR
      C      THIS WILL ASSIGN THE CONSTANT TO THE CORRESPONDING VARIABLE
0103      CON(L)=MPAD+1
0104      RETURN
0105      END

```

>

CONDIT

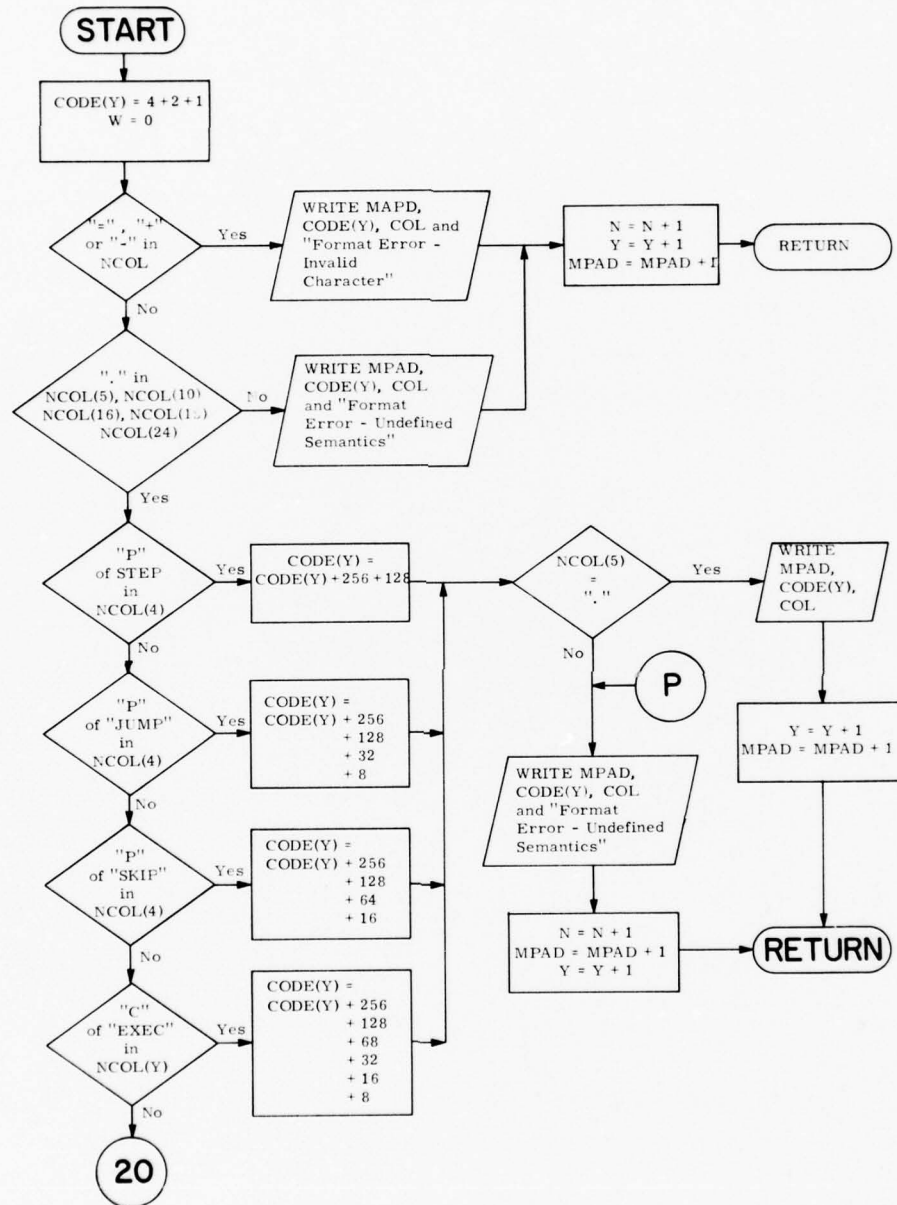


Figure 1-6. CONDIT

CONDIT (cont.)

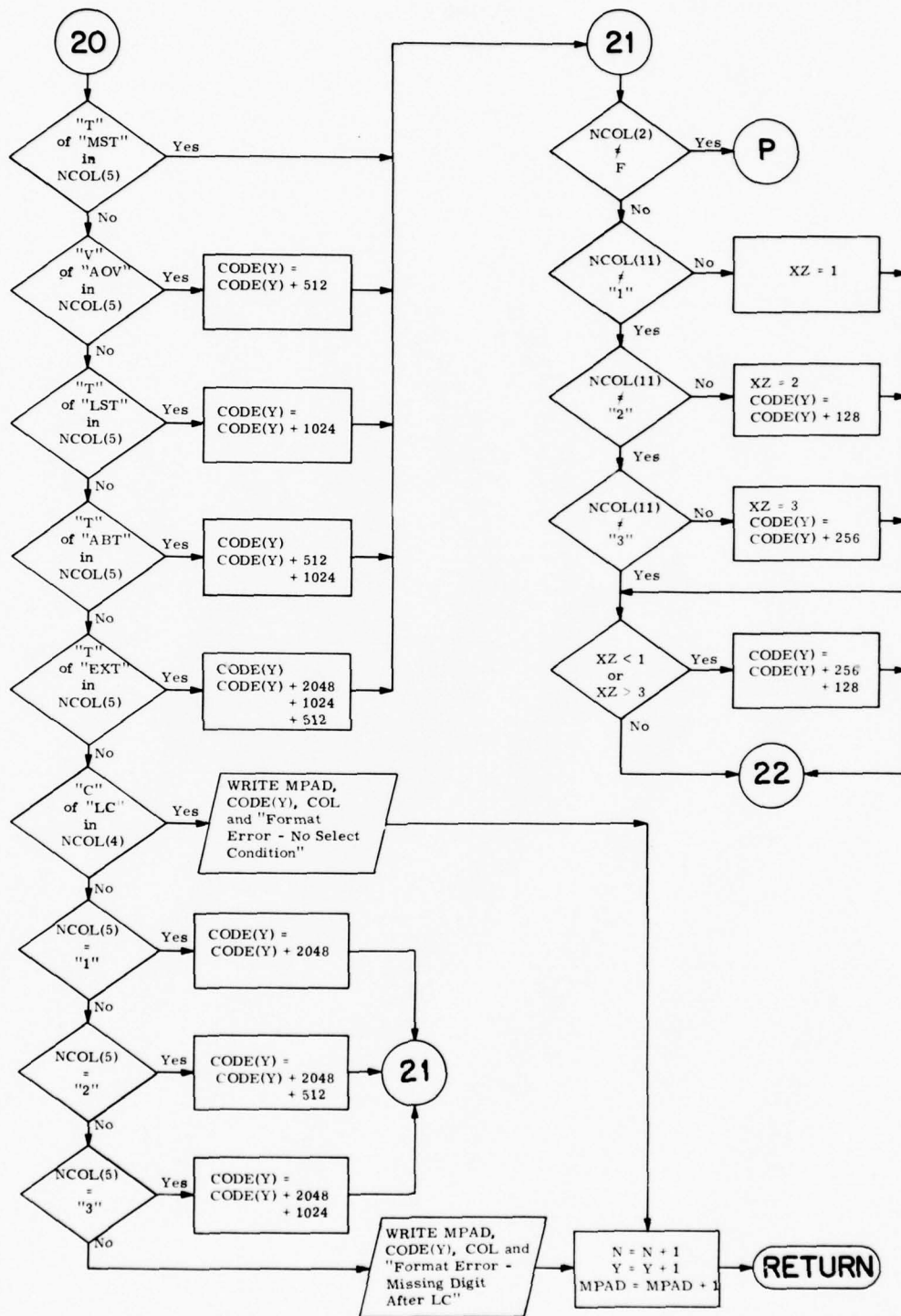


Figure 1-6. (Cont.)

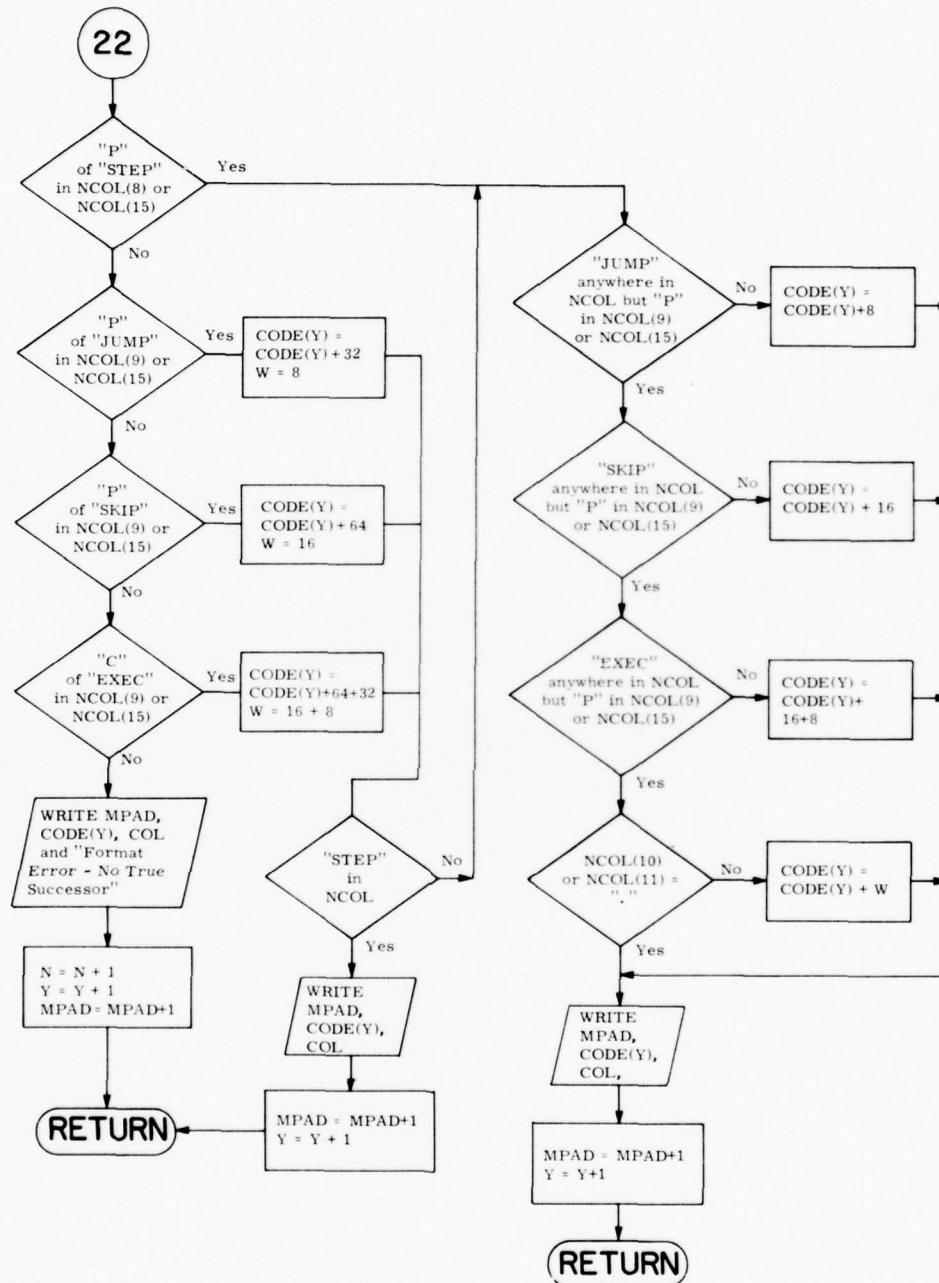


Figure 1-6. (Cont.)

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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CONDIT.OBJ=CONDIT.FOR/NOSN/LI:1

```

0001      SUBROUTINE CONDIT
0002      C      CONDIT CHECKS FOR THE CONDITION TESTS
0003      IMPLICIT INTEGER (A-Y)
0003      LOGICAL*1 COL,NCOL,QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,
1QLQ,QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,
200Q,Q1Q,Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,
3QER,QFR,QGR,QHR
0004      COMMON NCOL(30)
0005      COMMON /IMP/COL(80),CODE(128)
0006      COMMON /VAX/ N,MPAD,FR,Y
0007      COMMON /CODES/QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,
1QM,Q,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,QOQ,Q1Q,
202Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,QFR,QGR,QHR
0007      D      WRITE (1,1) NCOL
0007      D1     FORMAT (1X,'NCOL=',30A1)
0007      C      SET BITS 14-16
0008      CODE(Y)=4+2+1
0009      W=0
0010      R3=SCAN(1,QER,0,0,0,0,Q)
0011      R=SCAN(1,QDR,0,0,0,0,P)
0012      R1=SCAN(1,QAR,0,0,0,0,P)
0013      R2=SCAN(1,QBR,0,0,0,0,P)
0013      D      WRITE (1,2) Q,R,R1,R2
0013      D2     FORMAT (1X,'Q=',I1,'R=',I1,' R1=',I1,' R2=',I1)
0014      IF (R.EQ.1.OR.R1.EQ.1.OR.R2.EQ.1) GOTO 520
0016      IF (Q.NE.5.AND.Q.NE.10.AND.Q.NE.16.AND.Q.NE.18.AND.Q.NE.24)
1GOTO 530
0018      X=SCAN(4,QSQ,QTQ,QEQ,QPQ,0,K)
0019      IF (K.NE. 4) GOTO 10
0019      C      SET BITS 8-9
0021      CODE(Y)=CODE(Y)+256+128
0022      IF (NCOL(5).EQ. QER) GOTO 510
0024      5      CALL WRT(34,2)
0025      RETURN
0026      10     X=SCAN(4,QJQ,QUQ,QMQ,QPQ,0,L)
0027      IF (L.NE. 4) GOTO 20
0027      C      SET BITS 8,9,11,13
0029      CODE(Y)=CODE(Y)+256+128+32+8
0030      IF (NCOL(5).EQ.QER) GOTO 510
0032      GOTO 5
0033      20     X=SCAN(4,QSQ,QKQ,QIQ,QPQ,0,L1)
0034      IF (L1.NE.4) GOTO 30
0034      C      SET BITS 8-10,12
0036      CODE(Y)=CODE(Y)+256+128+64+16
0037      IF (NCOL(5).EQ. QER) GOTO 510
0039      GOTO 5
0040      30     X=SCAN(4,QEQ,QXQ,QEQ,QCR,0,L2)
0041      IF (L2.NE. 4) GOTO 40
0041      C      SET BITS 8-13
0043      CODE(Y)=CODE(Y)+256+128+64+32+16+8
0044      IF (NCOL(5).EQ.QER) GOTO 510
0046      GOTO 5
0046      C      CHECK FOR RESERVED WORDS IN COLUMNS 3-5
0047      40     X=SCAN(3,QMQ,QSQ,QTQ,0,0,L3)
0048      IF (L3.EQ. 5) GOTO 200
0050      X=SCAN(3,QAQ,QOQ,QVQ,0,0,L4)

```


FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

MON 28-FEB-77 09:16:45

PAGE 002

CONDIT.OBJ=CONDIT.FOR/NOSN/LI:1

```
0051      IF (L4 .NE. 5) GOTO 50
          C      SET BIT 7
0053      CODE(Y)=CODE(Y)+512
0054      GOTO 200
0055      50      X=SCAN(3,QLQ,QSQ,QTQ,0,0,L5)
0056      IF (L5.NE.5) GOTO 60
          C      SET BIT 6
0058      CODE(Y)=CODE(Y)+1024
0059      GOTO 200
0060      60      X=SCAN(3,QAQ,QBQ,QTQ,0,0,L6)
0061      IF (L6 .NE. 5) GOTO 70
          C      SET BITS 6-7
0063      CODE(Y)=CODE(Y)+1024+512
0064      GOTO 200
0065      70      X=SCAN(3,REQ,QXQ,QTQ,0,0,L7)
0066      IF (L7 .NE. 5) GOTO 80
          C      SET BITS 5-7
0068      CODE(Y)=CODE(Y)+2048+1024+512
0069      GOTO 200
0070      80      X=SCAN(2,QLQ,QCQ,0,0,0,L8)
0071      IF (L8 .EQ.4) GOTO 90
0073      CALL WRT(19,2)
0074      RETURN
          C      CHANGE HOLLERITH TO DECIMAL
0075      90      IF (NCOL(5) .NE. Q1Q) GOTO 601
0077      WZ=1
0078      GOTO 610
0079      601      IF (NCOL(5) .NE. Q2Q) GOTO 602
0081      WZ=2
0082      GOTO 610
0083      602      IF (NCOL(5).NE.Q3Q) GOTO 610
0085      WZ=3
0086      610      IF (WZ.GT.3.OR.WZ.LT.1) GOTO 95
0088      GOTO (100,110,120),WZ
0089      95      CALL WRT(25,2)
0090      RETURN
          C      SET BIT 5
0091      100      CODE(Y)=CODE(Y)+2048
0092      GOTO 200
          C      SET BITS 5,7
0093      110      CODE(Y)=CODE(Y)+2048+512
0094      GOTO 200
          C      SET BITS 5-6
0095      120      CODE(Y)=CODE(Y)+2048+1024
          C      CHANGE COLUMN 11 TO DECIMAL
0096      200      IF (NCOL(2).NE. QFQ) GOTO 5
0098      IF (NCOL(11) .NE. Q1Q) GOTO 701
0100      XZ=1
0101      GOTO 710
0102      701      IF (NCOL(11) .NE. Q2Q) GOTO 702
0104      XZ=2
0105      GOTO 710
0106      702      IF (NCOL(11) .NE. Q3Q) GOTO 710
0108      XZ=3-
0109      710      IF (XZ.LT.1.OR.XZ.GT.3) GOTO 205
0111      GOTO (230,220,210),XZ
```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

MON 28-FEB-77 09:16:45

PAGE 003

CONDIT.OBJ=CONDIT.FOR/NOSN/LI:1

```
      C      SET BITS 8-9
0112 205  CODE(Y)=CODE(Y)+256+128
0113      GOTO 230
      C      SET BIT 8
0114 210  CODE(Y)=CODE(Y)+256
0115      GOTO 230
      C      SET BIT 9
0116 220  CODE(Y)=CODE(Y)+128
0117 230  X=SCAN(4,QSQ,QTQ,REQ,QPQ,0,J1)
      C      CHECK FOR "STEP" IN COLUMNS 6-9 OR 12-15
0118      IF (J1.NE. 9.AND. J1.NE. 15) GOTO 240
0120      GOTO 350
      C      SAME WITH "JUMP" OR "EXEC"
0121 240  X1=SCAN(4,QJQ,QUQ,QMQ,QPQ,0,J2)
0122      IF (J2.NE. 9.AND. J2.NE. 15) GOTO 250
      C      SET BIT 11
0124      CODE(Y)=CODE(Y)+32
0125      W=8
0126      GOTO 300
0127 250  X2=SCAN(4,QSQ,QKQ,QIQ,QPQ,0,J3)
0128      IF (J3.NE. 9.AND. J3.NE. 15) GOTO 260
      C      SET BIT 10
0130      CODE(Y)=CODE(Y)+64
0131      W=16
0132      GOTO 300
0133 260  X3=SCAN(4,REQ,QXQ,REQ,QCQ,0,J4)
0134      IF (J4.EQ. 9.OR. J4.EQ. 15) GOTO 270
0136      CALL WRT(21,2)
0137      RETURN
      C      SET BITS 10-11
0138 270  CODE(Y)=CODE(Y)+64+32
0139      W=16+8
0140 300  IF (X.EQ. 0) GOTO 350
0142      GOTO 510
0143 350  X4=SCAN(4,QJQ,QUQ,QMQ,QPQ,0,J5)
0144      IF (X4.EQ.0) GOTO 370
0146      IF (J5.EQ.9.OR.J5.EQ.15) GOTO 370
      C      SET BIT 13
0148      CODE(Y)=CODE(Y)+8
0149      GOTO 510
0150 370  X5=SCAN(4,QSQ,QKQ,QIQ,QPQ,0,J6)
0151      IF (X5.EQ.0) GOTO 400
0153      IF (J6.EQ.9.OR.J6.EQ.15) GOTO 400
      C      SET BIT 12
0155      CODE(Y)=CODE(Y)+16
0156      GOTO 510
0157 400  X7=SCAN(4,REQ,QXQ,REQ,QCQ,0,J8)
0158      IF (X7.EQ.0) GOTO 500
0160      IF (J8.EQ.9.OR.J8.EQ.15) GOTO 500
      C      SET BITS 12-13
0162      CODE(Y)=CODE(Y)+16+8
0163      GOTO 510
      C      IF CODE ENDS IN COLUMN 10 OR 16,DO NOT ADD W TO CODE(Y)
0164 500  IF (NCOL(10).EQ.QER.OR.NCOL(16).EQ.QER) GOTO 510
0166      CODE(Y)=CODE(Y)+W
0167 510  WRITE (1,511) MPAD,CODE(Y),COL
```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

MON 28-FEB-77 09:16:45

PAGE 004

CONDIT.OBJ=CONDIT.FOR/NOSN/LI:1

```
0168 511  FORMAT (1X,05,4X,05,5X,80A1)
0169      MPAD=MPAD+1
0170      Y=Y+1
0171      RETURN
0172 520  CALL WRT(20,2)
0173      RETURN
0174 530  CALL WRT(34,2)
0175      RETURN
0176      END
```

>

LITRL

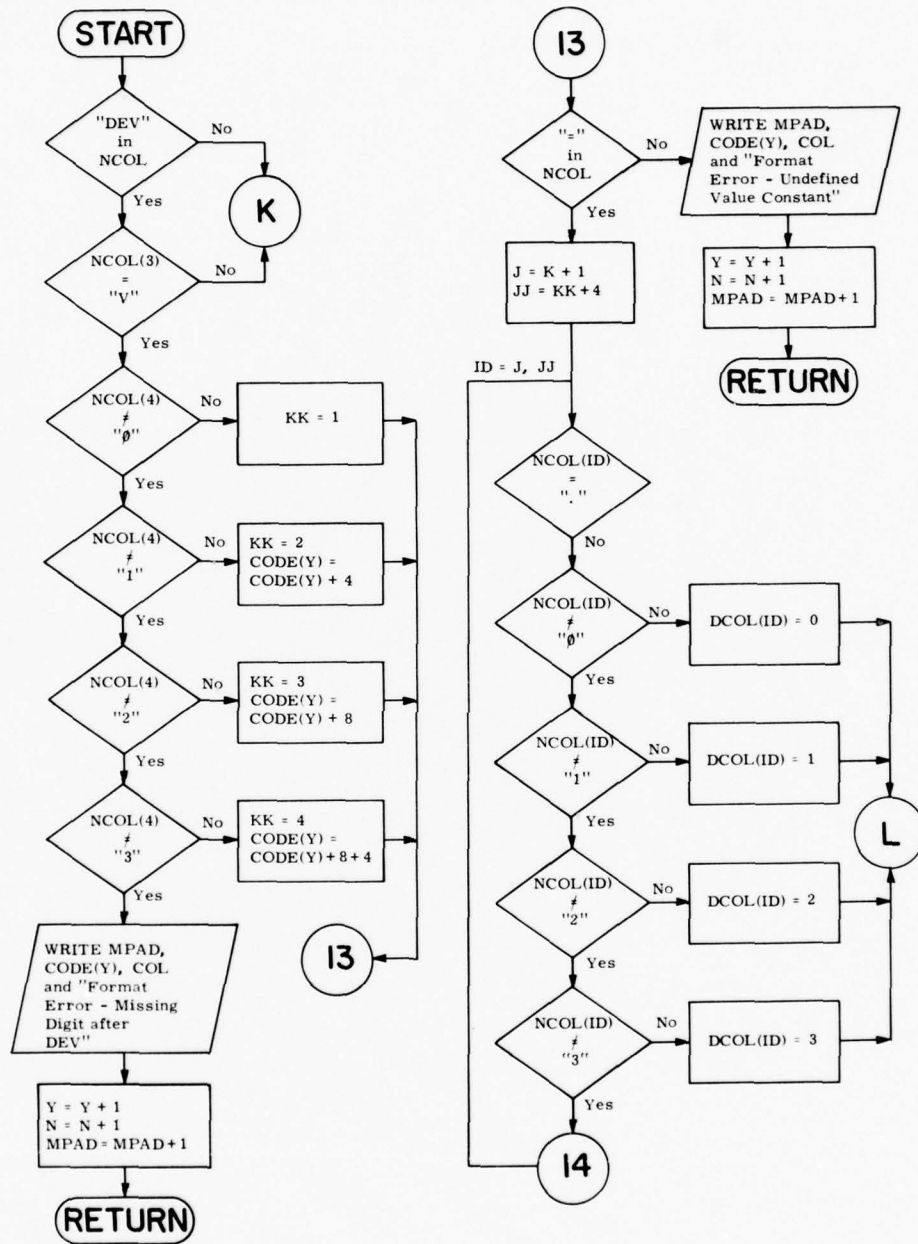


Figure 1-7. LITRL

LITRL (cont.)

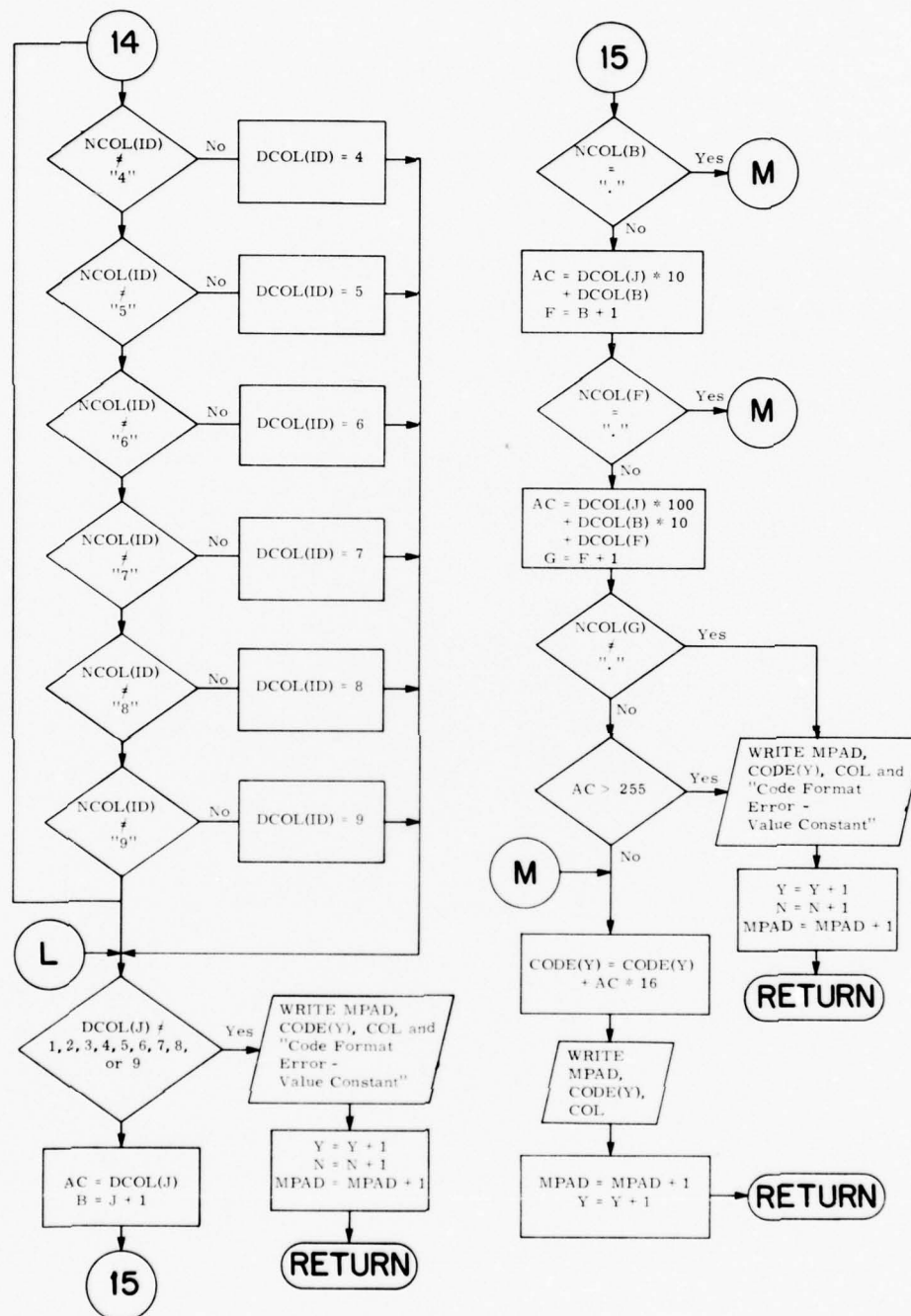


Figure 1-7. (Cont.)

LITRL (cont.)

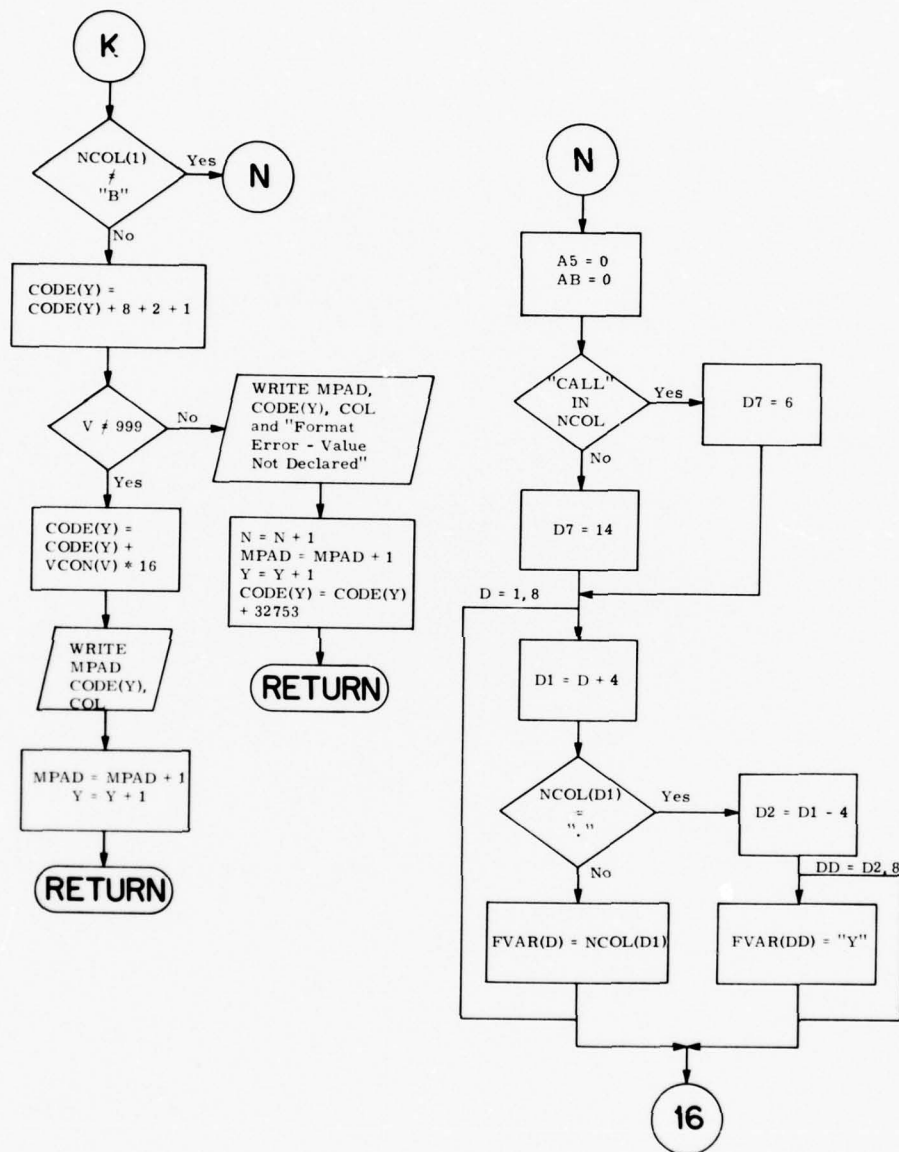


Figure 1-7. (Cont.)

LITRL (cont.)

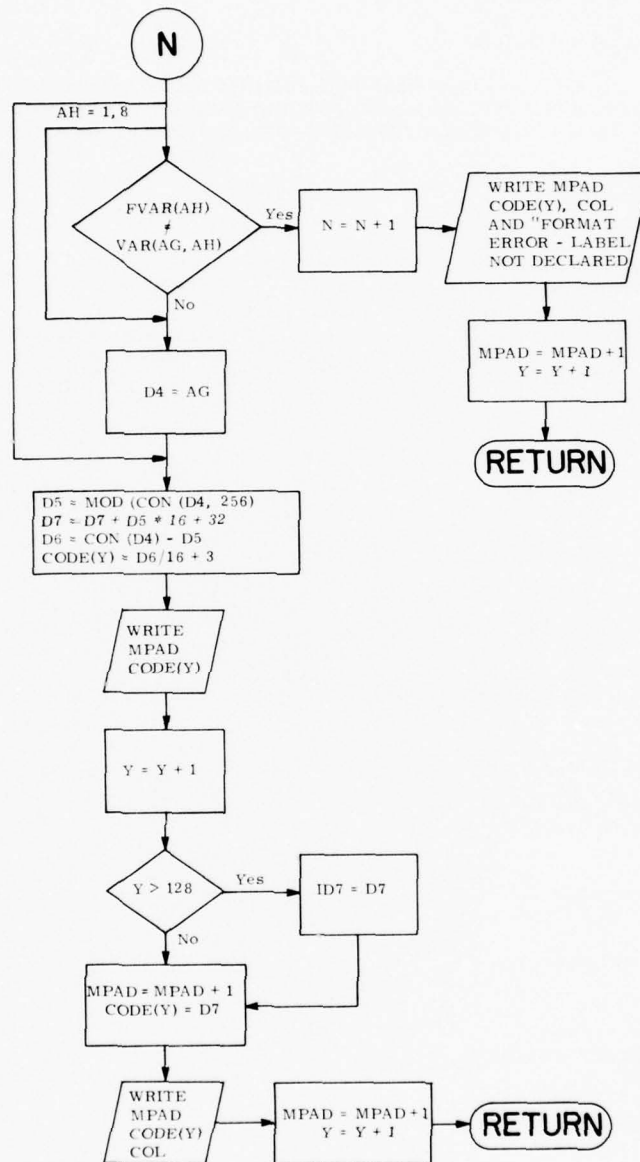


Figure 1-7. (Cont.)

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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PAGE 001

LITRL.OBJ=LITRL.FOR/NOSN/LI:1

```

0001      SUBROUTINE LITRL(V,DEV)
0002      IMPLICIT INTEGER (A-Y)
0003      LOGICAL*1 VVAR,FVAR,VAR
0004      LOGICAL*1 DCOL
0005      LOGICAL*1 COL,NCOL,QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,
1QLQ,QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,
2QOQ,Q1Q,Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,
3QFR,QGR,QHR
0006      DIMENSION DCOL(30)
0007      COMMON /FAR/FP1,FP2
0008      COMMON NCOL(30)
0009      COMMON /IMP/COL(80),CODE(128)
0010      COMMON /VAX/N,MPAD,FR,Y
0011      COMMON/VAL/VVAR(80,8),VCON(80)
0012      COMMON /SJI/FVAR(8),VAR(100,8),CON(100)
0013      COMMON /CODES/QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,
1QM, QNM, QOM, QPM, QQM, QRQ, QSM, QTM, QUQ, QVM, QWM, QXM, QYM, QZQ, QOM, Q1Q,
2Q2Q, Q3Q, Q4Q, Q5Q, Q6Q, Q7Q, Q8Q, Q9Q, QAR, QBR, QCR, QDR, QER, QFR,
3QGR, QHR
0014      COMMON /SULIT/ID7
0015      VW=SCAN(3,QDQ,QEQ,QVQ,0,0,JF)
      D      WRITE (1,890) VW
      D890   FORMAT(1X,'VW=',I1)
0016      IF (VW.NE.1) GO TO 10
0018      IF (JF.NE.3) GO TO 10
0020      IF (NCOL(4) .NE. QOQ) GOTO 420
0022      KK=1
0023      GOTO 1
0024 420    IF (NCOL(4) .NE. Q1Q) GOTO 430
0026      KK=2
0027      GOTO 1
0028 430    IF (NCOL(4) .NE. Q2Q) GOTO 440
0030      KK=3
0031      GOTO 1
0032 440    IF (NCOL(4) .NE. Q3Q) GOTO 8
0034      KK=4
0035 1      GOTO(5,2,3,4),KK
0036 8      CALL WRT(24,2)
0037      RETURN
      C      SET BIT 14
0038 2      CODE(Y)=CODE(Y)+4
0039      GOTO 5
      C      SET BIT 13
0040 3      CODE(Y)=CODE(Y)+8
0041      GOTO 5
      C      SET BITS 13+14
0042 4      CODE(Y)=CODE(Y)+8+4
0043 5      X=SCAN(1,QDR,0,0,0,0,K)
      D      WRITE (1,891) X
      D891   FORMAT(' X=',I1)
0044      IF(X.EQ.1)GOTO 7
0046 6      CALL WRT(23,2)
0047      RETURN
      C      THIS CHANGES FROM HOLERITH TO DECIMAL
0048 7      J=K+1
0049      JJ=K+4

```

FORTTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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PAGE 002

LITRL.OBJ=LITRL.FOR/NOSN/LI:1

```

0050      DO 11 ID=J,JJ
0051      IF (NCOL(ID).EQ.QER) GOTO 13
0053      IF (NCOL(ID).NE.Q0Q) GOTO 501
0055      DCOL(ID)=0
0056      GOTO 11
0057 501   IF (NCOL(ID).NE.Q1Q) GOTO 502
0059      DCOL(ID)=1
0060      GOTO 11
0061 502   IF (NCOL(ID).NE.Q2Q) GOTO 503
0063      DCOL(ID)=2
0064      GOTO 11
0065 503   IF (NCOL(ID).NE.Q3Q) GOTO 504
0067      DCOL(ID)=3
0068      GOTO 11
0069 504   IF (NCOL(ID).NE.Q4Q) GOTO 505
0071      DCOL(ID)=4
0072      GOTO 11
0073 505   IF (NCOL(ID).NE.Q5Q) GOTO 506
0075      DCOL(ID)=5
0076      GOTO 11
0077 506   IF (NCOL(ID).NE.Q6Q) GOTO 507
0079      DCOL(ID)=6
0080      GOTO 11
0081 507   IF (NCOL(ID).NE.Q7Q) GOTO 508
0083      DCOL(ID)=7
0084      GOTO 11
0085 508   IF (NCOL(ID).NE.Q8Q) GOTO 509
0087      DCOL(ID)=8
0088      GOTO 11
0089 509   IF (NCOL(ID).NE.Q9Q) GOTO 11
0091      DCOL(ID)=9
0092 11    CONTINUE
C        THIS MAKES SURE THERE IS A CONSTANT IN THE DEV STATEMENT
0093 13    IF (DCOL(J).NE.1.AND.DCOL(J).NE.2.AND.DCOL(J).NE.3.AND.DCOL(J).NE.4
        1.AND.DCOL(J).NE.5.AND.DCOL(J).NE.6.AND.DCOL(J).NE.7.AND.DCOL(J)
        2.NE.8.AND.DCOL(J).NE.9.AND.DCOL(J).NE.0) GOTO 6
D        WRITE (1,895) DCOL(J)
D895     FORMAT(1X,'DCOL(J)=' ,I1)
C        THIS FINDS THE CINSTANT IN THE DEV STATEMENT
0095      AC=DCOL(J)
0096      B=J+1
0097      IF (NCOL(B).EQ.QER) GOTO 9
0099      AC=DCOL(J)*10+DCOL(B)
0100      F=B+1
0101      IF (NCOL(F).EQ.QER) GOTO 9
0103      AC=DCOL(J)*100+DCOL(B)*10+DCOL(F)
C        THIS MAKES SURE THE CONSTANT IS NOT TOO LARGE
0104      G=F+1
0105      IF (NCOL(G).NE.QER) GOTO 6
0107      IF (AC.GT.255) GOTO 6
0109      9   CODE(Y)=CODE(Y)+AC*16
D        WRITE (1,61) AC, CODE(Y).
D61      FORMAT(' AC=' ,I3, ' CODE(Y)=' ,O5)
D        WRITE (1,893)
D893     FORMAT(' ABOUT TO CALL WRT(0,4) AT 53 IN LITRL')
0110      GOTO 400

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

SAT 26-FEB-77 17:35:56

PAGE 003

LITRL.OBJ=LITRL.FOR/NOSN/LI:1

```

      C      THE CONSTANT CORRESPONDING TO THE VARIABLE AFTER THE B IS NOW
      C      ADDED TO THE CODE.  THE VARIABLE WAS ALREADY FOUND IN THE MAIN
      C      PROGRAM.
0111 10      IF(NCOL(1).NE.QBQ) GOTO 15
0113      CODE(Y)=CODE(Y)+8+2+1
      D      WRITE (1,21) V
      D21     FORMAT (' V=',I3)
0114      IF (V.NE.999) GO TO 14
0116      N=N+1
0117      WRITE(1,29)MPAD, CODE(Y), (COL(I), I=1,80)
0118 29      FORMAT(1X,05,4X,05,5X,80A1/' FORMAT ERROR-VALUE NOT DECLARED')
0119      MPAD=MPAD+1
0120      CODE(Y)=CODE(Y)+32753
0121      Y=Y+1
0122      RETURN
0123 14      CODE(Y)=CODE(Y)+VCON(V)*16
      D      WRITE (1,17) VCON(V)
      D17     FORMAT (' VCON(V)=',I3)
0124      GOTO 400
      C      THIS ASSIGNS THE CODE FOR THE CALL OR GOTO STATEMENTS
0125 15      A5=0
0126      AB=0
      D      WRITE (1,892)
      D892    FORMAT(1X,'CHECKING FOR CALL OR GOTO IN LITRL')
      C      THIS CHECKS TO SEE IF A LIT TO IR CODE IS NEEDED
0127      C=SCAN(4,QCQ,QAQ,QLQ,QLQ,0,C1)
0128      IF (C.NE.1) GO TO 20
0130      D7=6
0131      GOTO 25
0132 20      D7=14
0133 25      DO 27 D=1,8
0134          D1=D+4
0135          IF (NCOL(D1).EQ.QER) GO TO 30
0137 27      FVAR(D)=NCOL(D1)
0138          GO TO 33
0139 30      D2=D1-4
0140          DO 32 DD=D2,8
0141 32      FVAR(DD)=QHR
0142 33      CONTINUE
      D      WRITE(1,34) FVAR
0143 34      FORMAT(' LABEL IS ',8A1)
0144          DO 40 AG=1,PF2
0145          DO 35 AH=1,8
0146          IF (FVAR(AH).NE.VAR(AG,AH)) GO TO 40
0148 35      CONTINUE
0149          D4=AG
0150          GO TO 45
0151 40      CONTINUE
0152          N=N+1
0153          WRITE(1,23)MPAD, CODE(Y), (COL(I), I=1,80)
0154 23      FORMAT(1X,05,4X,05,5X,80A1/' FORMAT ERROR-LABEL NOT DECLARED')
0155          MPAD=MPAD+1
0156          Y=Y+1
0157          RETURN
0158 45      D5=MOD(CON(D4),256)
0159          D7=D7+D5*16

```


FORTTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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LITRL.OBJ=LITRL.FOR/NOSN/LI:1

```

0160      D6=CON(D4)-D5
0161      CODE(Y)=D6/16+3
0162      WRITE(1,46) MPAD, CODE(Y)
0163  46   FORMAT(1X,05,4X,05)
0164      Y=Y+1
0165      IF (Y .GT. 128) ID7=D7
0166      MPAD=MPAD+1
0167      CODE(Y)=D7
0168      GO TO 400
0169      C   THIS ASSIGNS THE LIT TO IR CODE
0170  50   CODE(Y)=CODE(Y)+2+1
      C   THIS FINDS THE PROPER LABEL FOR THE STATEMENT
0171      DO 60 H=1,8
0172      H1=H+4
0173      IF (NCOL(H1).EQ.QER) GO TO 63
0175  60   FVAR(H)=NCOL(H1)
0176  63   IN=H1-4
0177      DO 64 I=IN,8
0178  64   FVAR(I)=QHR
0179      DO 70 AB=1,PF2
0180      DO 65 AC=1,8
0181      IF (FVAR(AC).NE.VAR(AB,AC)) GO TO 70
0183  65   CONTINUE
0184      AZ=AB
0185      GOTO 100
0186  70   CONTINUE
0187      AB=0
0188      WRITE(1,23) MPAD, CODE(Y), COL
0189      MPAD=MPAD+1
0190      Y=Y+1
0191      N=N+1
0192      GOTO 150
      C   THE LABEL HAS BEEN FOUND AND THIS ADDS THE CORRESPONDING
      C   VALUE.
0193  100  AB=AZ
0194      A5=(CON(AB)-16)/256
0195      CODE(Y)=CODE(Y)+A5*16
0196      WRITE (1,401) MPAD, CODE(Y), COL
0197      MPAD=MPAD+1
0198      Y=Y+1
0199      CODE(Y)=-16
      C   IT IS PAST THE LIT TO IR AND THE PROGRAM IS CHECKING TO SEE IF
      C   THE PROGRAM WILL NOW DO TWICEWHAT THE LIT TO IR PART DID,
      C   ONCE FOR THE CALL AND ONCE FOR THE GOTO
0200  150  L1=SCAN(4,QCQ,QAQ,QLQ,QLQ,0,D3)
0201      IF (L1.NE.1) GO TO 270
0203      CODE(Y)=CODE(Y)+4+2
0204  170  IF (AB .NE. 0) GOTO 200
0206      MPAD=MPAD+1
0207      RETURN
0208  200  XY=MOD(CON(AB),256)
0209      CODE(Y)=CODE(Y)+XY*16
0210      GOTO 400
0211  270  CODE(Y)=CODE(Y)+14
0212      GOTO 170
0213  400  WRITE(1,401) MPAD, CODE(Y), COL

```

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FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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LITRL.OBJ=LITRL.FOR/NOSN/LI:1

```
0214      401 FORMAT(1X,05,4X,05,5X,80A1)
0215           MPAD=MPAD+1
0216           Y=Y+1
0217           RETURN
0218           END
```

>

LOGIC

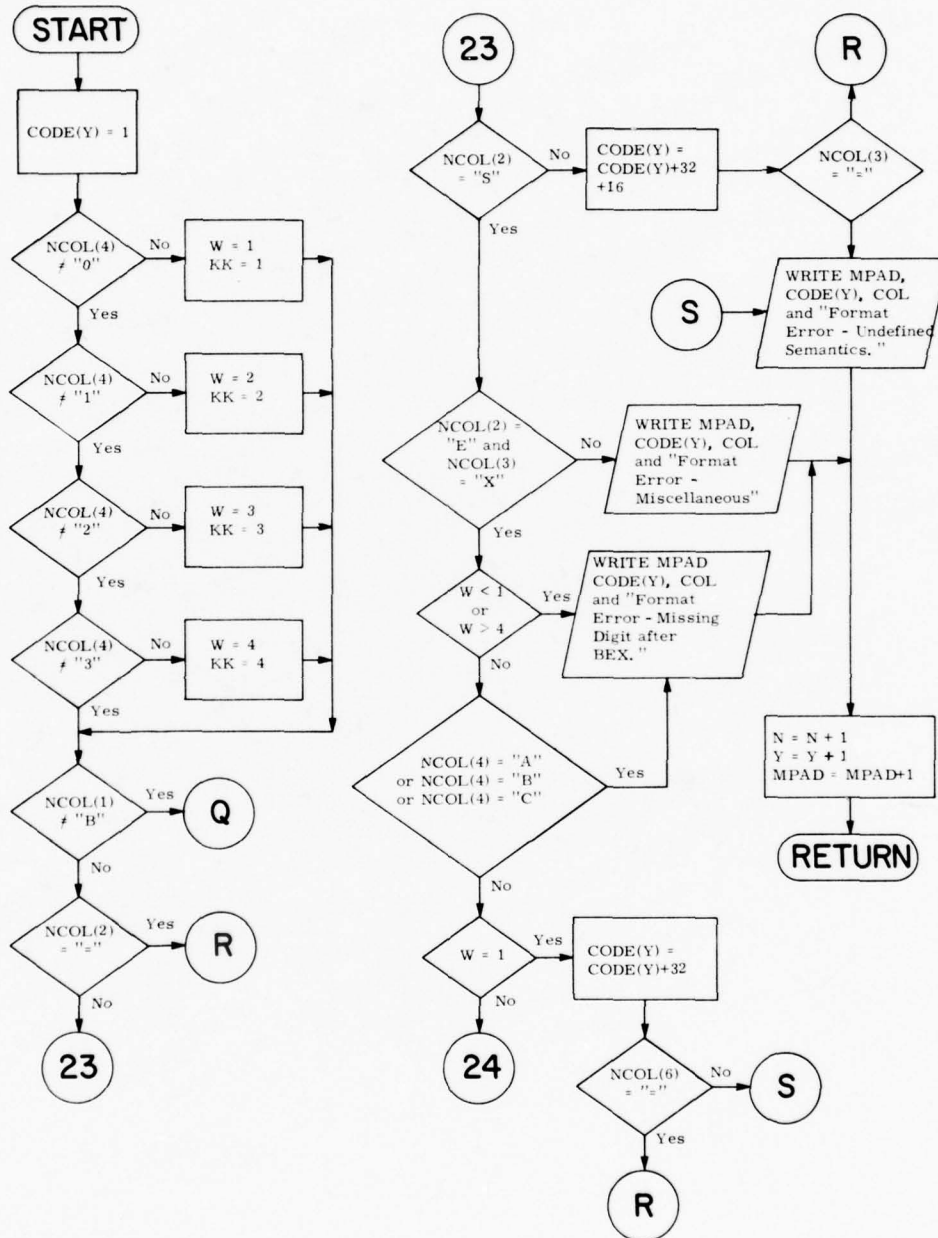


Figure 1-8. LOGIC

LOGIC (cont.)

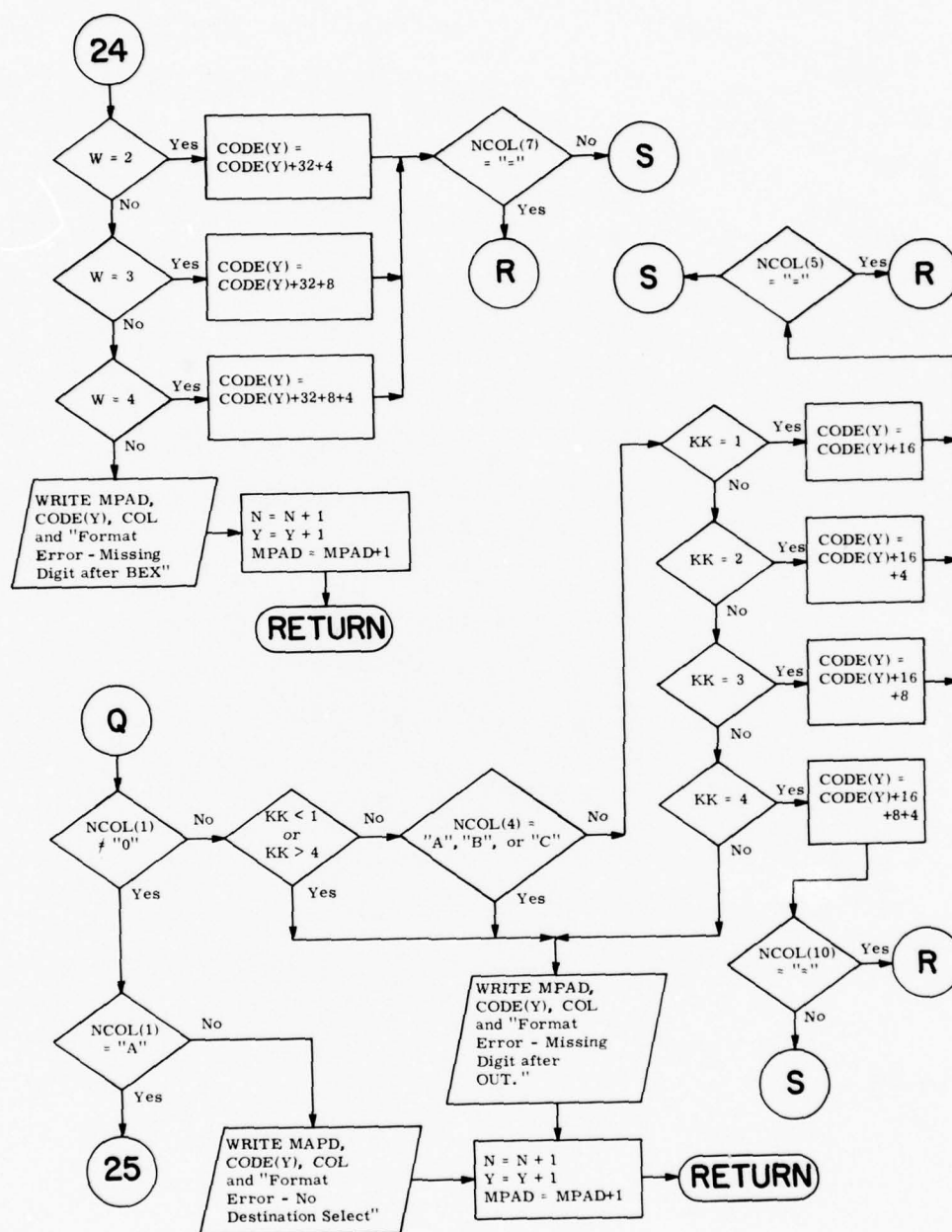


Figure 1-8. (Cont.)

LOGIC (cont.)

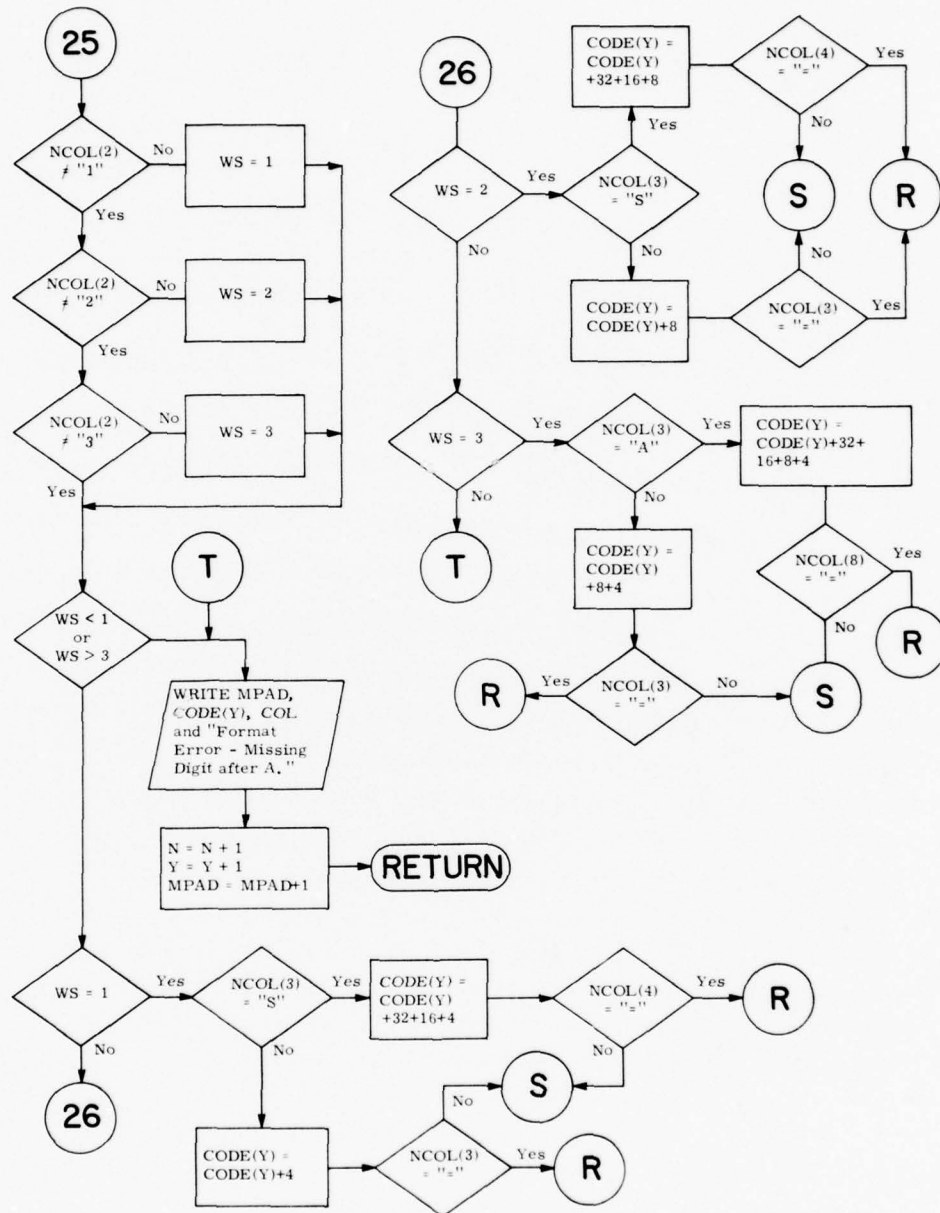


Figure 1-8. (Cont.)

LOGIC (cont.)

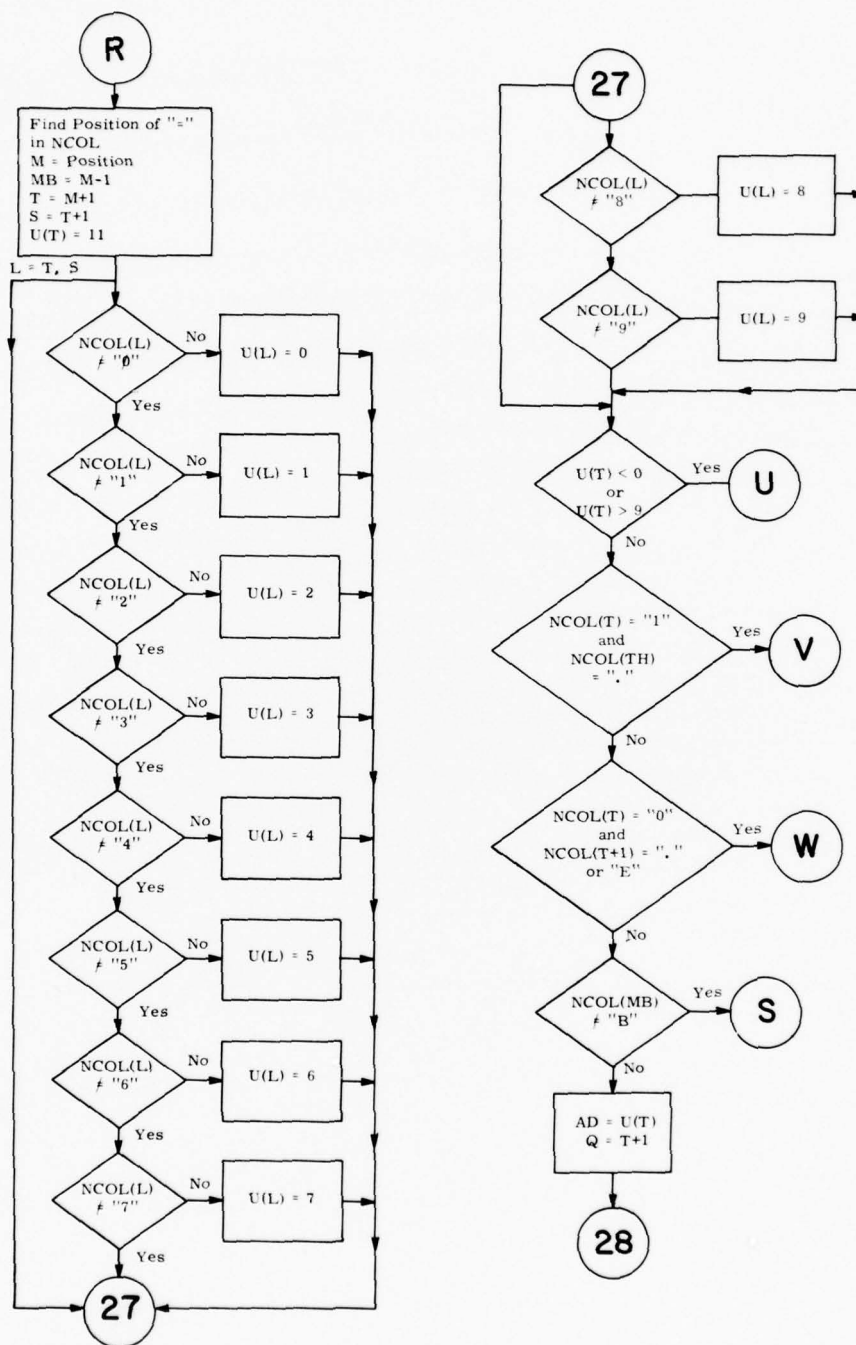


Figure 1-8. (Cont.)

LOGIC (cont.)

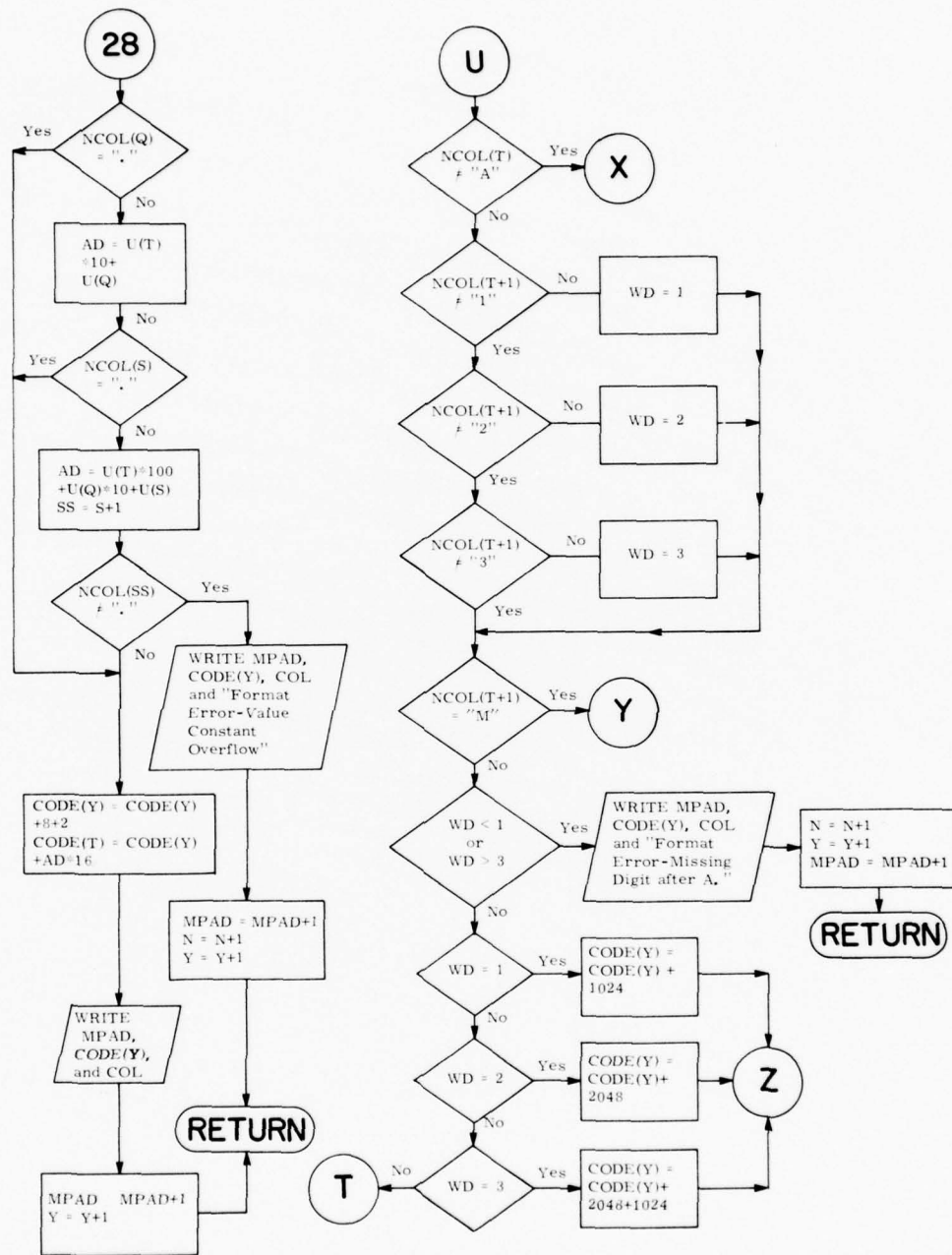


Figure 1-8. (Cont.)

LOGIC (cont.)

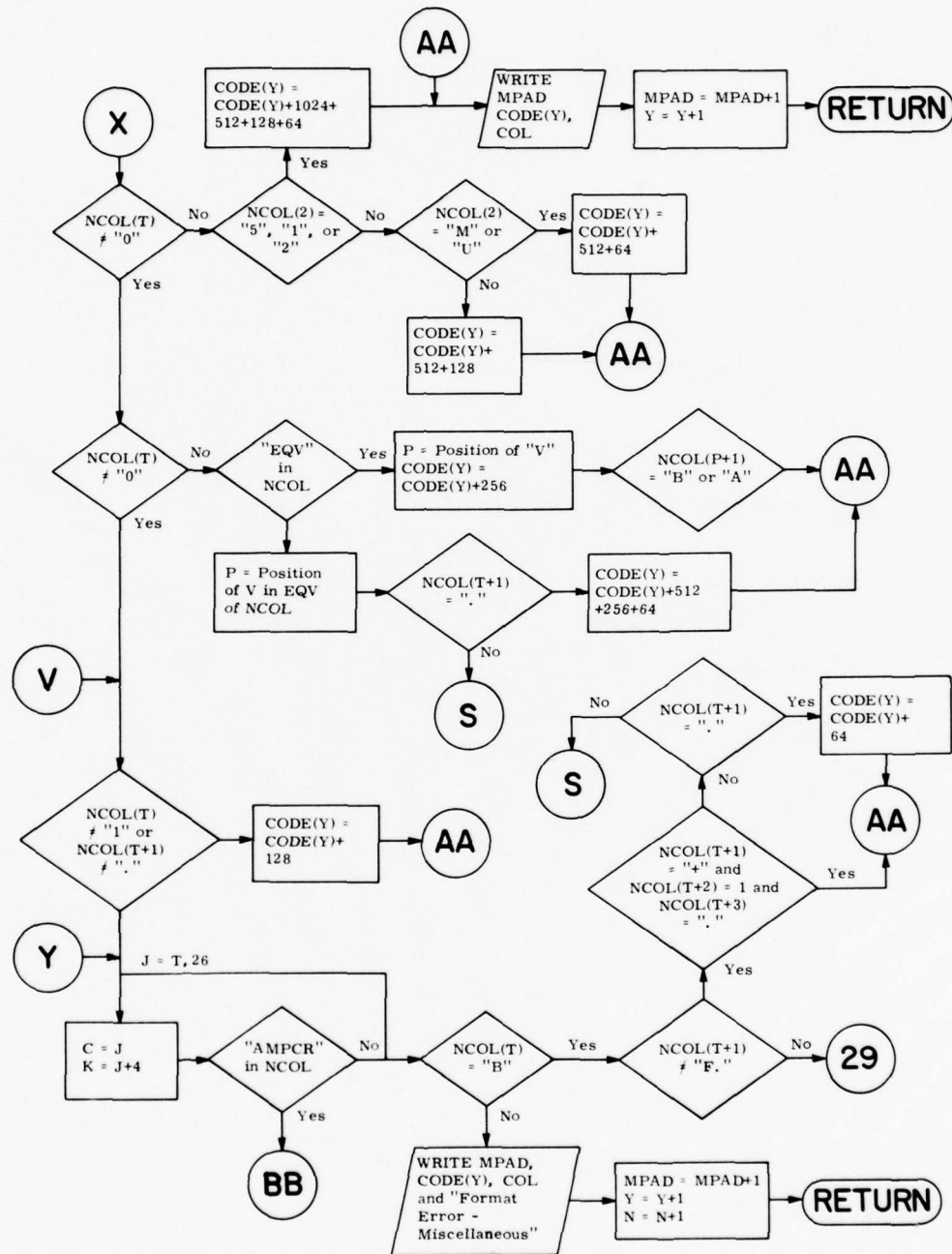


Figure 1-8. (Cont.)

LOGIC (cont.)

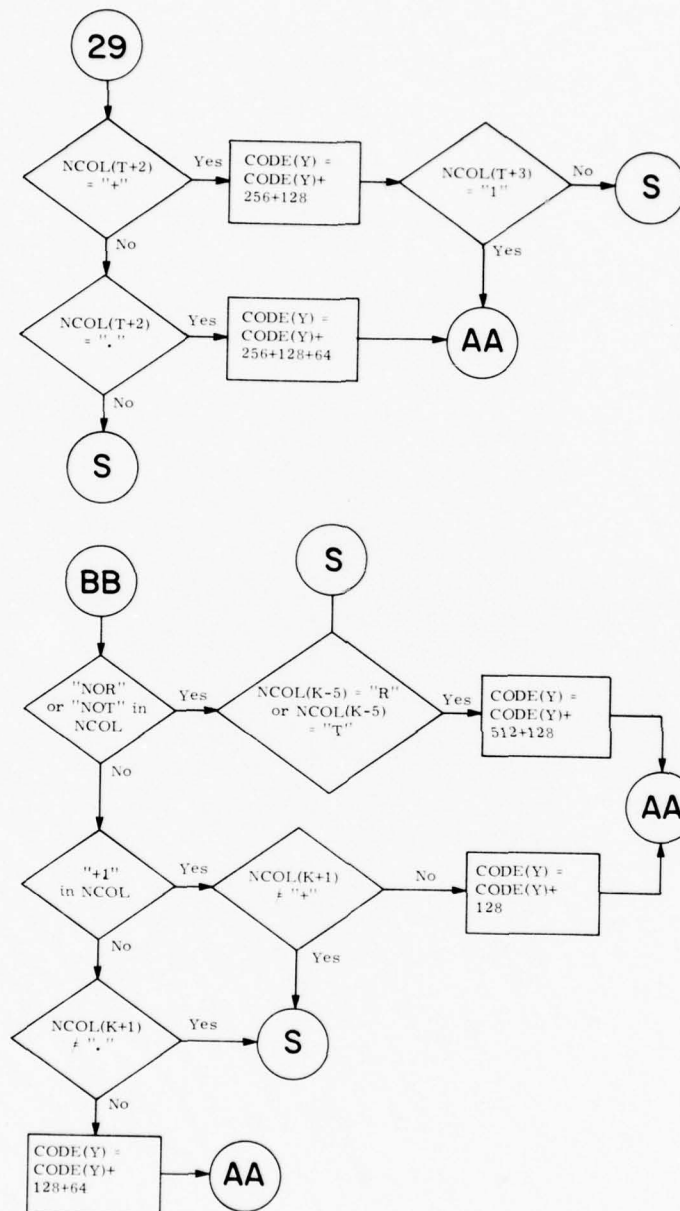


Figure 1-8. (Cont.)

LOGIC (cont.)

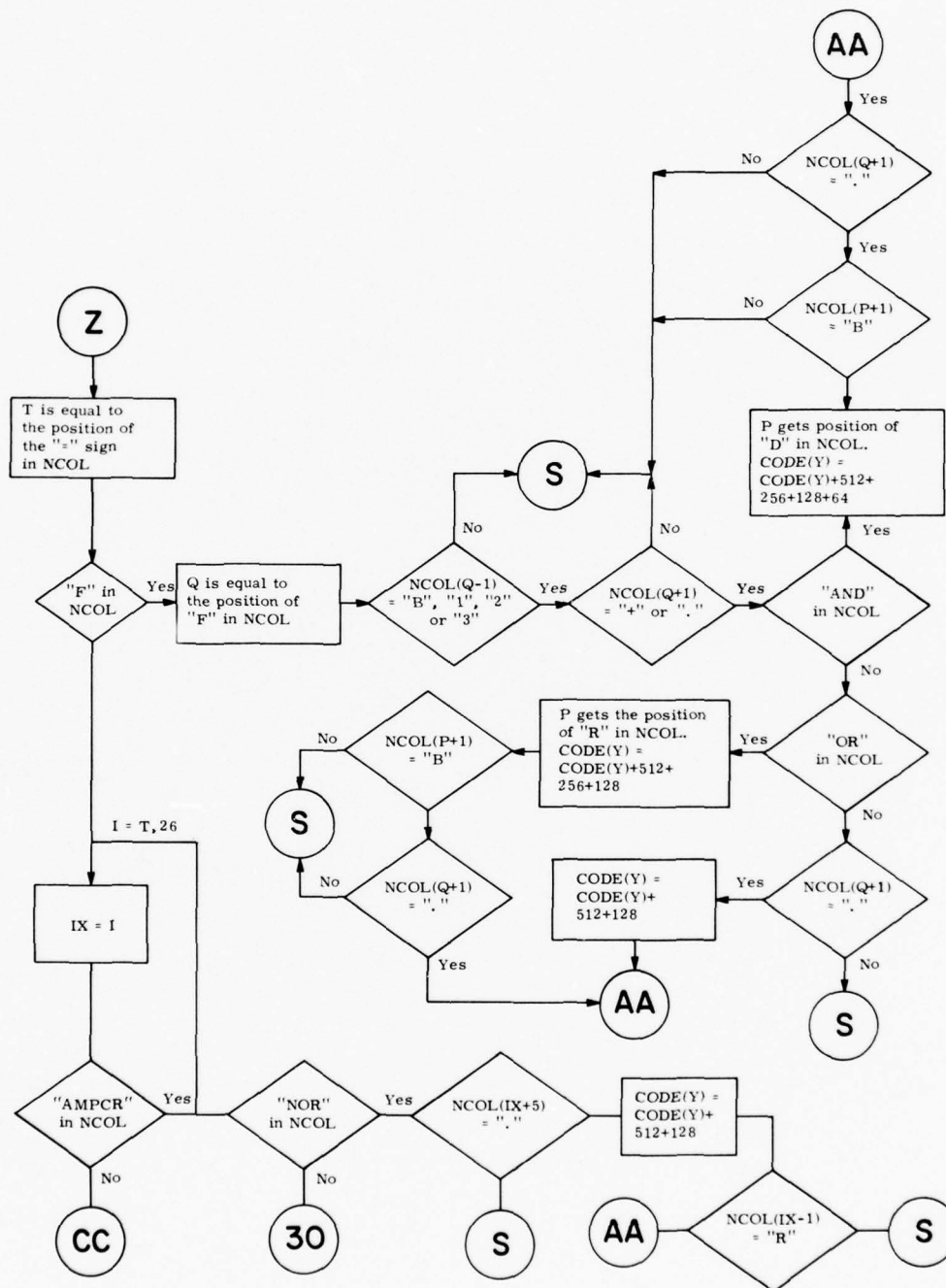


Figure 1-8. (Cont.)

LOGIC (cont.)

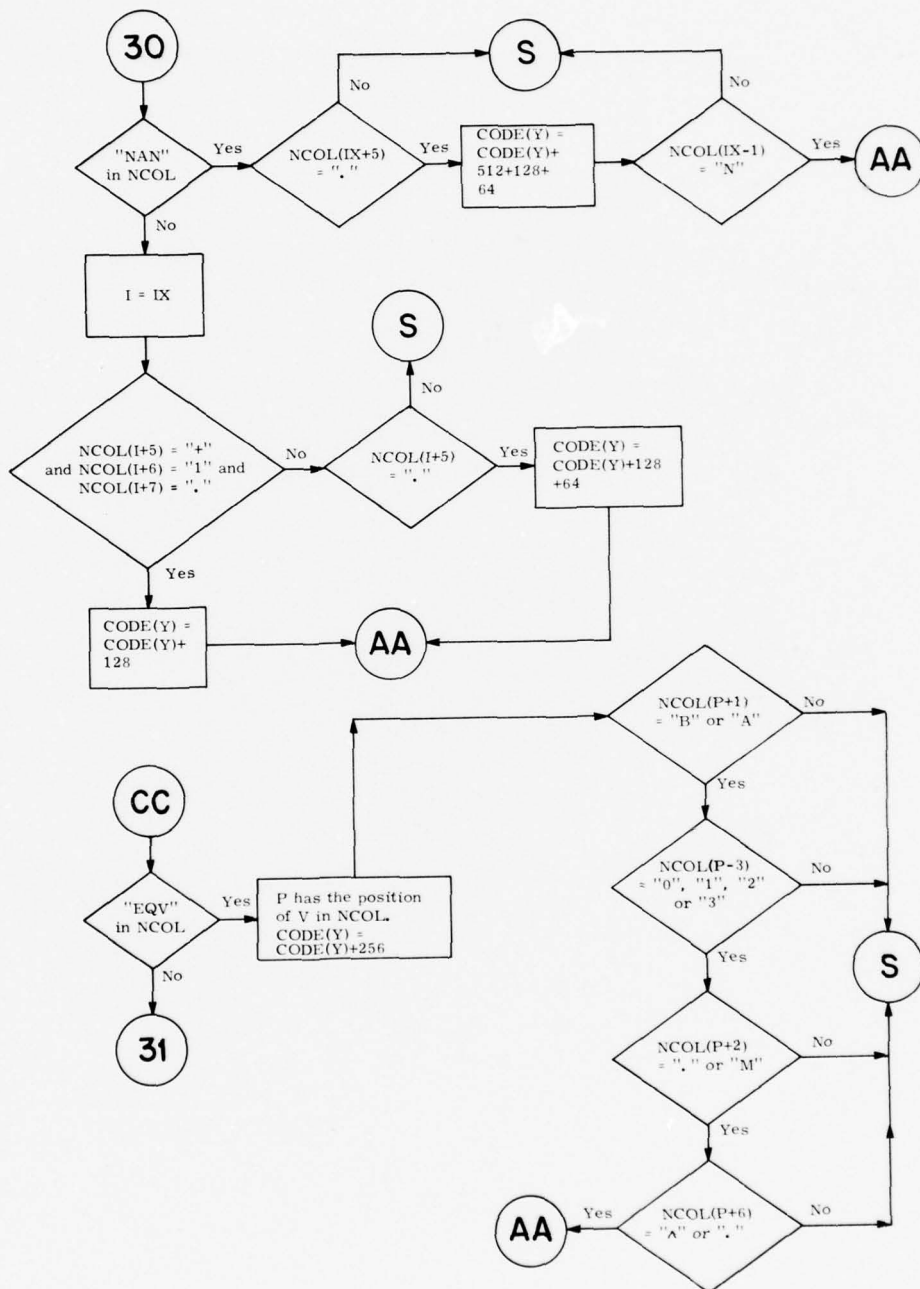


Figure 1-8. (Cont.)

LOGIC (cont.)

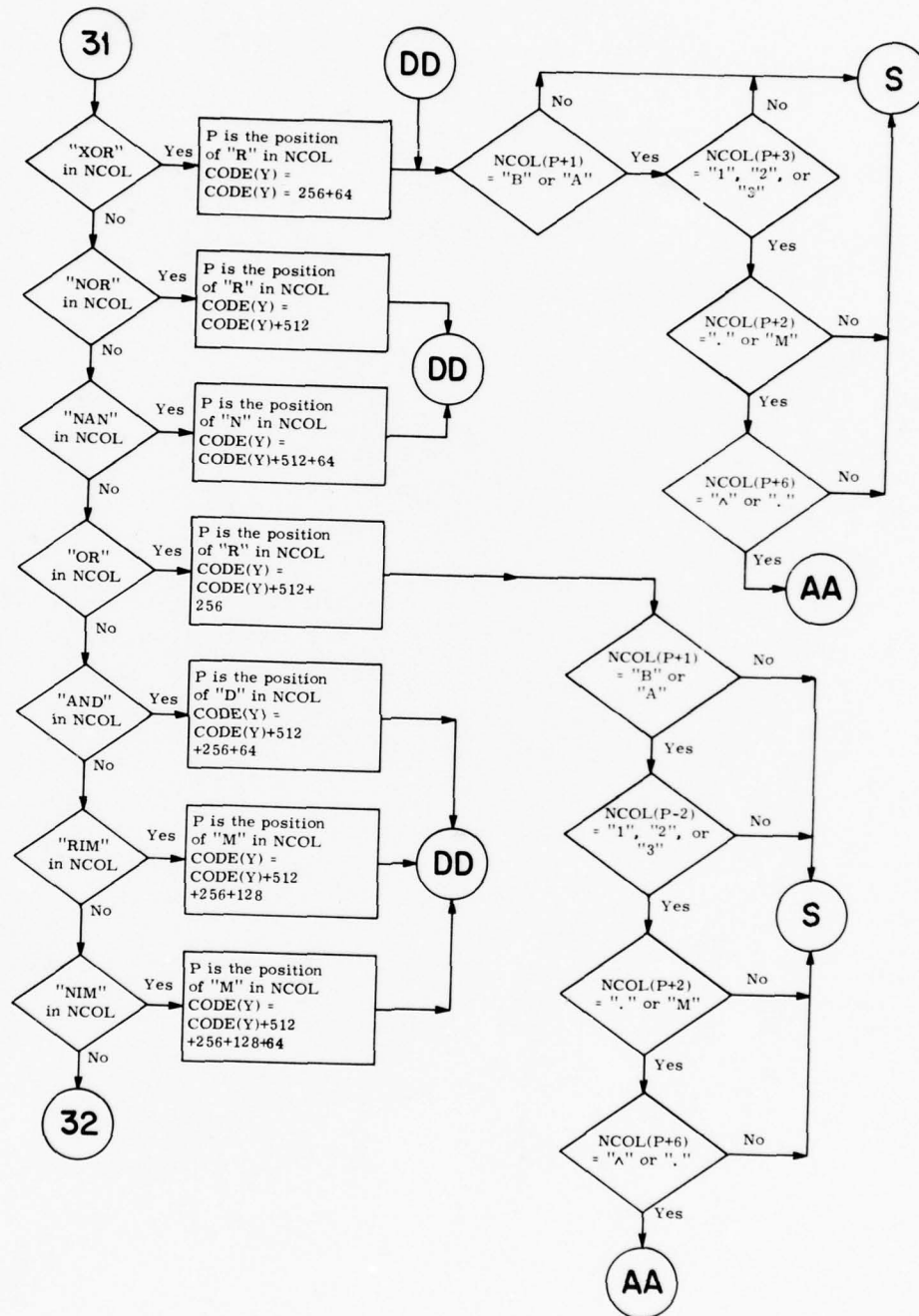


Figure 1-8. (Cont.)

LOGIC (cont.)

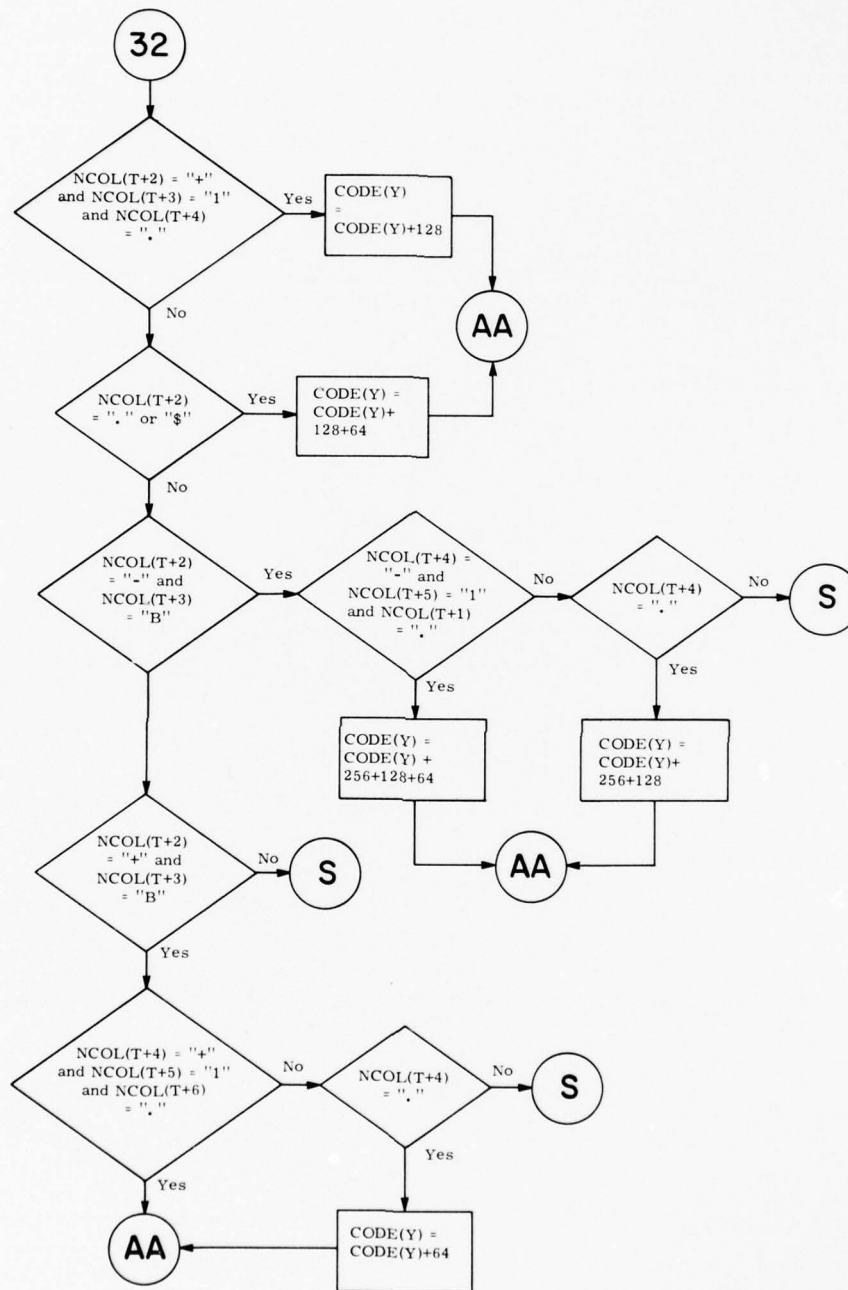


Figure 1-8. (Cont.)

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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LOGIC.OBJ=LOGIC.FOR/NOSN/LI:1

```
0001      SUBROUTINE LOGIC
0002      IMPLICIT INTEGER (A-Y)
0003      LOGICAL*1 COL,NCOL,QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,
1QLQ,QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,
2QOQ,Q1Q,Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,
3QFR,QGR,QHR
0004      COMMON NCOL(30)
0005      COMMON /IMP/ COL(80),CODE(128)
0006      COMMON /VAX/N,MFAD,FR,Y
0007      COMMON /CODES/ QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,
1QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,QOQ,Q1Q,
2Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,QFR,QGR,QHR
0008      DIMENSION U(30)
0009      C      SET BIT 16
0010      CODE(Y)=1
0011      IF (NCOL(4).NE. QOQ) GOTO 2
0012      W=1
0013      KK=1
0014      GOTO 10
0015      2      IF (NCOL(4) .NE. Q1Q) GOTO 3
0016      W=2
0017      KK=2
0018      GOTO 10
0019      3      IF (NCOL(4) .NE. Q2Q) GOTO 4
0020      W=3
0021      KK=3
0022      GOTO 10
0023      4      IF (NCOL(4) .NE. Q3Q) GOTO 10
0024      W=4
0025      KK=4
0026      10     IF (NCOL(1) .NE. QBQ) GOTO 100
0027      IF (NCOL(2) .EQ. QDR) GOTO 500
0028      C      GO CHECK AFTER THE EQUAL SIGN
0029      IF (NCOL(2) .NE. QSQ) GOTO 60
0030      C      SET BITS 11,12
0031      CODE(Y)=CODE(Y)+32+16
0032      IF (NCOL(3) .EQ. QDR) GOTO 500
0033      GOTO 696
0034      60     IF (NCOL(2) .EQ. QEQ .AND. NCOL(3) .EQ. QXQ) GOTO 65
0035      CALL WRT(18,2)
0036      RETURN
0037      65     IF (W.LT.1.OR.W.GT.4) GOTO 67
0038      IF (NCOL(4).EQ.QAQ.OR.NCOL(4).EQ.QBQ.OR.NCOL(4).EQ.QCQ) GOTO 67
0039      GOTO (70,80,90,95) W
0040      67     CALL WRT(26,2)
0041      RETURN
0042      C      SET BIT 11
0043      70     CODE(Y)=CODE(Y)+32
0044      IF (NCOL(6).EQ.QDR) GOTO 500
0045      GOTO 696
0046      C      SET BITS 11,14
0047      80     CODE(Y)=CODE(Y)+32+4
0048      IF (NCOL(7).EQ.QDR) GOTO 500
0049      GOTO 696
0050      CSET BITS 11,13
0051      90     CODE(Y)=CODE(Y)+32+8
```

FORTRAN IV V01B-02
CORE=08K, UIC=220,203

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LOGIC.OBJ=LOGIC.FOR/NOSN/LI:1

```
0059      IF (NCOL(7).EQ.QDR) GOTO 500
0061      GOTO 696
          C
0062 95     SET BITS 11,13,14
          CODE(Y)=CODE(Y)+32+8+4
0063      IF (NCOL(7).EQ.QDR) GOTO 500
0065      GOTO 696
          C
0066 100    IF (NCOL(1) .NE. Q0Q) GOTO 200
0068      IF (KK.LT.1.OR.KK.GT.4) GOTO 105
0070      IF (NCOL(4).EQ.QAQ.OR.NCOL(4).EQ.QBQ.OR.NCOL(4).EQ.QCQ) GOTO 105
0072 103    GOTO (110,120,130,140) KK
0073 105    CALL WRT(31,2)
0074      RETURN
          C
0075 110    CODE(Y)=CODE(Y)+16
0076      IF (NCOL(5).EQ.QDR) GOTO 500
0078      GOTO 696
          C
0079 120    SET BITS 12,14
          CODE(Y)=CODE(Y)+16+4
0080      IF (NCOL(5).EQ.QDR) GOTO 500
0082      GOTO 696
          C
0083 130    SET BITS 12,13
          CODE(Y)=CODE(Y)+16+8
0084      IF (NCOL(5).EQ. QDR) GOTO 500
0086      GOTO 696
          C
0087 140    SET BITS 12-14
          CODE(Y)=CODE(Y)+16+8+4
0088      IF (NCOL(10) .EQ. QDR) GOTO 500
0090      GOTO 696
0091 200    IF (NCOL(1).EQ.QAQ) GOTO 300
0093      CALL WRT(32,2)
0094      RETURN
0095 300    IF (NCOL(2).NE. Q1Q) GOTO 11
0097      WS=1
0098      GOTO 20
0099 11     IF (NCOL(2).NE.Q2Q) GOTO 12
0101      WS=2
0102      GOTO 20
0103 12     IF (NCOL(2) .NE. Q3Q) GOTO 20
0105      WS=3
0106 20     IF (WS.LT.1.OR.WS.GT.3) GOTO 305
0108      IF (NCOL(2).EQ.QAQ.OR.NCOL(2).EQ.QBQ.OR.NCOL(2).EQ.QCQ) GOTO 696
0110 301    GOTO (310,320,330) WS
0111 305    CALL WRT(33,2)
0112      RETURN
0113 310    IF (NCOL(3).EQ.QSQ) GOTO 315
          C
0115      CODE(Y)=CODE(Y)+4
0116      IF (NCOL(3).EQ.QDR) GOTO 500
0118      GOTO 696
          C
0119 315    SET BITS 11,12,14
          CODE(Y)=CODE(Y)+32+16+4
0120      IF (NCOL(4).EQ.QDR) GOTO 500
0122      GOTO 696
0123 320    IF (NCOL(3).EQ.QSQ) GOTO 325
          C
          SET BIT 13
```


FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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LOGIC.OBJ=LOGIC.FOR/NOSN/LI:1

```
0125      CODE(Y)=CODE(Y)+8
0126      IF (NCOL(3).EQ.QDR) GOTO 500
0128      GOTO 696
      C    SET BITS 11-13
0129 325   CODE(Y)=CODE(Y)+32+16+8
0130      IF (NCOL(4).EQ.QDR) GOTO 500
0132      GOTO 696
0133 330   IF (NCOL(3).EQ.QAQ) GOTO 335
0135      CODE(Y)=CODE(Y)+8+4
0136      IF (NCOL(3).EQ.QDR) GOTO 500
0138      GOTO 696
      C    SET BITS 11-14
0139 335   CODE(Y)=CODE(Y)+32+16+8+4
0140      IF (NCOL(8).EQ.QDR) GOTO 500
0142      GOTO 696
      C    SEARCH FOR "="-SAVE POSITION
0143 500   X=SCAN(1,QDR,0,0,0,0,M)
0144      MB=M-1
0145      T=M+1
0146      S=T+2
      C    U(T) SET AT 11 TO GET OUT OF TEST LATER
0147      U(T)=11
0148      DO 40 L=T,S
0149      IF (NCOL(L).NE.Q0Q) GOTO 21
0151      U(L)=0
0152      GOTO 40
0153 21    IF (NCOL(L).NE.Q1Q) GOTO 22
0155      U(L)=1
0156      GOTO 40
0157 22    IF (NCOL(L).NE.Q2Q) GOTO 23
0159      U(L)=2
0160      GOTO 40
0161 23    IF (NCOL(L).NE.Q3Q) GOTO 24
0163      U(L)=3
0164      GOTO 40
0165 24    IF (NCOL(L).NE.Q4Q) GOTO 25
0167      U(L)=4
0168      GOTO 40
0169 25    IF (NCOL(L).NE.Q5Q) GOTO 26
0171      U(L)=5
0172      GOTO 40
0173 26    IF (NCOL(L).NE.Q6Q) GOTO 27
0175      U(L)=6
0176      GOTO 40
0177 27    IF (NCOL(L).NE.Q7Q) GOTO 28
0179      U(L)=7
0180      GOTO 40
0181 28    IF (NCOL(L).NE.Q8Q) GOTO 29
0183      U(L)=8
0184      GOTO 40
0185 29    IF (NCOL(L).NE.Q9Q) GOTO 40
0187      U(L)=9
0188 40    CONTINUE
      D    WRITE (1,41) U(T),NCOL
      D41  FORMAT (' U(T)=',I2,' NCOL=',30A1)
0189      IF (U(T).LT.0.OR.U(T).GT.9) GOTO 509
```

FORTTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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PAGE 004

LOGIC.OBJ=LOGIC.FOR/NOSN/LI:1

```

0191      IF (NCOL(T).EQ.Q1Q.AND.NCOL(T+1).EQ.QER) GOTO 650
0193      IF (NCOL(T).EQ.Q0Q.AND.(NCOL(T+1).EQ.QER.OR.NCOL(T+1).EQ.QEQ))
          1GOTO 600
0195      IF (NCOL(MB).NE.QBQ) GOTO 696
0197      AD=U(T)
0198      Q=T+1
0199      IF (NCOL(Q).EQ.QER) GOTO 502
0201      AD=U(T)*10+U(Q)
0202      IF (NCOL(S).EQ.QER) GOTO 502
0204      AD=U(T)*100+U(Q)*10+U(S)
0205      SS=S+1
0206      IF (NCOL(SS).NE.QER) GOTO 504
0208      IF (AD.GT.255) GOTO 504
0210 502   CODE(Y)=CODE(Y)+8+2
0211      CODE(Y)=CODE(Y)+AD*16
0212      WRITE (1,43) MPAD, CODE(Y), COL
0213      MPAD=MPAD+1
0214      Y=Y+1
0215      RETURN
0216 504   CALL WRT(40,2)
0217      RETURN
0218 509   IF (NCOL(T).NE. QAQ) GOTO 550
0220      IF (NCOL(T+1).NE. Q1Q) GOTO 551
0222      WD=1
0223      GOTO 555
0224 551   IF (NCOL(T+1).NE. Q2Q) GOTO 552
0226      WD=2
0227      GOTO 555
0228 552   IF (NCOL(T+1).NE. Q3Q) GOTO 555
0230      WD=3
0231 555   IF (NCOL(T+1).EQ.QMQ) GOTO 670
0233      IF (WD.LT.1.OR.WD.GT.3) GOTO 508
0235      GOTO (510,520,530) WD
0236 508   CALL WRT(33,2)
0237      RETURN
          C      SET BIT 6
0238 510   CODE(Y)=CODE(Y)+1024
0239      GOTO 1000
          C      SET BIT 5
0240 520   CODE(Y)=CODE(Y)+2048
0241      GOTO 1000
          C      SET BITS 5-6
0242 530   CODE(Y)=CODE(Y)+1024+2048
0243      GOTO 1000
0244 550   IF (NCOL(T).NE.Q0Q) GOTO 600
0246      IF (NCOL(2).EQ.QSQ.OR.NCOL(2).EQ.Q1Q.OR.NCOL(2).EQ.Q2Q)
          1GOTO 570
0248      IF (NCOL(2).EQ.QMQ.OR.NCOL(2).EQ.QUQ) GOTO 560
          C      SET BITS 7,9
0250      CODE(Y)=CODE(Y)+512+128
0251      GOTO 695
          C      SET BITS 7,10
0252 560   CODE(Y)=CODE(Y)+512+64
0253      GOTO 695
          C      SET BITS 6,7,9,10
0254 570   CODE(Y)=CODE(Y)+1024+512+128+64

```

FORTTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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LOGIC.OBJ=LOGIC.FOR/NOSN/LI:1

```
0255      GOTO 695
0256 600   IF (NCOL(T).NE. QOQ) GOTO 650
0258      X=SCAN(3,REQ,QQQ,QVQ,0,0,P)
0259      IF (X.NE.1) GOTO 610
          C   SET BIT 8
0261      CODE(Y)=CODE(Y)+256
0262      IF (NCOL(P+1).EQ.QBQ.OR.NCOL(P+1).EQ.QAQ) GOTO 695
0264      GOTO 696
0265 610   IF (NCOL(T+1).EQ.QER) GOTO 620
0267      GOTO 696
          C   SET BITS 9-10
0268 620   CODE(Y)=CODE(Y)+128+64+512+128
0269      GOTO 695
0270 650   IF (NCOL(T).NE.Q1Q.OR.NCOL(T+1).NE.QER) GOTO 670
          C   SET BIT 9
0272      CODE(Y)=CODE(Y)+128
0273      GOTO 695
0274 670   DO 680 J=T,26
0275      C=J
0276      K=J+4
0277      IF (NCOL(J).EQ.QAQ.AND.NCOL(J+1).EQ.QMQ.AND.NCOL(J+2).EQ.QPQ
1.AND.NCOL(J+3).EQ.QCQ.AND.NCOL(J+4).EQ.QRQ) GOTO 690
0279 680   CONTINUE
0280      GOTO 750
0281 690   X=SCAN(3,QNQ,QOQ,QRQ,0,0,P)
0282      XN=SCAN(3,QNQ,QOQ,QTQ,0,0,P)
0283      IF (X.NE.1.AND.XN.NE.1) GOTO 700
0285      IF (NCOL(K-5).EQ.QRQ.OR.NCOL(K-5).EQ.QTQ) GOTO 697
0287      GOTO 696
          C   SET BITS 7,9
0288 697   CODE(Y)=CODE(Y)+512+128
0289      GOTO 695
0290 700   X=SCAN(3,QAR,Q1Q,QER,0,0,P)
0291      IF (X.NE.1) GOTO 710
0293      IF (NCOL(K+1).NE. QAR) GOTO 696
          C   SET BIT 9
0295      CODE(Y)=CODE(Y)+128
0296      GOTO 695
          C   CHECK AFTER "AMPCR"
0297 710   IF (NCOL(K+1).NE. QER) GOTO 696
          C   SET BITS 9-10
0299      CODE(Y)=CODE(Y)+128+64
0300      GOTO 695
0301 750   IF (NCOL(T).EQ. QBQ) GOTO 760
0303      CALL WRT(18,2)
0304      RETURN
0305 760   IF (NCOL(T+1).NE. QFQ) GOTO 800
0307      IF (NCOL(T+2).EQ. QAR) GOTO 780
0309      IF (NCOL(T+2).EQ. QER) GOTO 770
0311      GOTO 696
          C   SET BITS 8-10
0312 770   CODE(Y)=CODE(Y)+256+128+64
0313      GOTO 695
          C   SET BITS 8-9
0314 780   CODE(Y)=CODE(Y)+256+128
0315      IF (NCOL(T+3).EQ.Q1Q) GOTO 695
```

FORTTRAN IV VO1B-02
CORE=08K, UIC=[20,20]

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LOGIC.OBJ=LOGIC.FOR/NOSN/LI:1

```
0317      GOTO 696
0318 800   IF (NCOL(T+1).EQ.QAR.AND.NCOL(T+2).EQ.Q1Q.AND.NCOL(T+3).EQ.
        1QER) GOTO 695
0320      IF (NCOL(T+1).NE. QER) GOTO 696
        C      SET BIT 10
0322      CODE(Y)=CODE(Y)+64
0323 695   WRITE (1,43) MPAD, CODE(Y), COL
0324 43    FORMAT (1X,05,4X,05,5X,80A1)
0325      MPAD=MPAD+1
0326      Y=Y+1
0327      RETURN
0328 696   CALL WRT(34,2)
0329      RETURN
0330 1000  CALL LOGICA(T)
0331      RETURN
0332      END
```

>

FORTRAN IV V01B-02
CORE=08K, UIC=120,201

MON 28-FEB-77 09:30:01

PAGE 001

LOGICA.OBJ=LOGICA.FOR/NOSN/LI:1

```

0001      SUBROUTINE LOGICA(T)
0002      IMPLICIT INTEGER (A-Y)
0003      LOGICAL*1 NCOL,COL,QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,
1QLQ,QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,
2QOQ,Q1Q,Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,
3QFR,QGR,QHR
0004      COMMON NCOL(30)
0005      COMMON /IMP/COL(80),CODE(128)
0006      COMMON /VAX/N,MFAD,FR,Y
0007      COMMON /CODES/QAQ,QBQ,QCQ,QDQ,QEQ,QFQ,QGQ,QHQ,QIQ,QJQ,QKQ,QLQ,
1QMQ,QNQ,QOQ,QPQ,QQQ,QRQ,QSQ,QTQ,QUQ,QVQ,QWQ,QXQ,QYQ,QZQ,QOQ,Q1Q,
2Q2Q,Q3Q,Q4Q,Q5Q,Q6Q,Q7Q,Q8Q,Q9Q,QAR,QBR,QCR,QDR,QER,QFR,QGR,QHR
      C      IF NCOL(N)=A
0008      X=SCAN(1,QFQ,0,0,0,0,Q)
      D      WRITE (1,1)T,X
      D1     FORMAT (' IN LOGICA:T=',I2,' X=',I1)
0009      IF(X.NE. 1) GO TO 1050
0011      IF (NCOL(Q-1).NE.QBQ.AND.NCOL(Q-1).NE.Q1Q.AND.NCOL(Q-1).NE.Q2Q
1.AND.NCOL(Q-1).NE.Q3Q) GO TO 696
0013      IF (NCOL(Q+1).NE.QAR.AND.NCOL(Q+1).NE.QER) GO TO 696
0015      X=SCAN(3,QAQ,QNQ,QDQ,0,0,P)
0016      IF(X.NE.1) GO TO 1010
      C      SET BITS 7-10
0018      CODE(Y)=CODE(Y)+512+256+128+64
0019      IF(NCOL(P+1).NE.QBQ) GO TO 696
0021      IF(NCOL(Q+1).NE.QER) GO TO 696
0023      GO TO 695
0024 1010 X=SCAN(2,QOQ,QRQ,0,0,0,P)
0025      IF(X.NE.1) GO TO 1020
      C      SET BITS 7-9
0027      CODE(Y)=CODE(Y)+512+256+128
0028      IF(NCOL(P+1).NE.QBQ) GO TO 696
0030      IF(NCOL(Q+1).NE.QER) GO TO 696
0032      GO TO 695
0033 1020 IF (NCOL(Q+1).NE.QER) GO TO 696
      C      SET BITS 7-9
0035      CODE(Y)=CODE(Y)+512+128
0036      GO TO 695
0037 1050 DO 5 I=T,26
0038      IX=I
0039      IF (NCOL(I).EQ.QAQ.AND.NCOL(I+1).EQ.QMQ.AND.NCOL(I+2).EQ.QPQ
1.AND.NCOL(I+3).EQ.QCQ.AND.NCOL(I+4).EQ.QRQ) GO TO 1060
0041 5      CONTINUE
0042      GO TO 2000
0043 1060 X=SCAN(3,QNQ,QOQ,QRQ,0,0,P)
0044      IF(X.NE.1) GO TO 1070
0046      IF (NCOL(IX+5).NE.QER) GO TO 696
      C      SET BITS 7,9
0048      CODE(Y)=CODE(Y)+512+128
0049      IF (NCOL(IX-1).EQ.QRQ) GO TO 695
0051      GO TO 696
0052 1070 X=SCAN(3,QNQ,QAQ,QNQ,0,0,P)
0053      IF (X.NE.1) GO TO 1080
0055      IF (NCOL(IX+5).NE.QER) GO TO 696
      C      SET BITS 7,9,10
0057      CODE(Y)=CODE(Y)+512+128+64

```


FORTTRAN IV V01B-02
CORE=08K, UIC=[20,20]

MON 28-FEB-77 09:30:01 PAGE 002
LOGICA.OBJ=LOGICA.FOR/NOSN/LI:1

```

0058      IF (NCOL(IX-1).EQ.QNQ) GO TO 695
0060      GO TO 696
0061 1080  I=IX
0062      IF (NCOL(I+5).NE.QAR.OR.NCOL(I+6).NE.Q1Q.OR.NCOL(I+7).NE.QER)
      1GO TO 1095
      C      SET BIT 9
0064      CODE(Y)=CODE(Y)+128
0065      GO TO 695
0066 1095  IF (NCOL(I+5).NE.QER) GO TO 696
      C      SET BITS 9-10
0068      CODE(Y)=CODE(Y)+128+64
0069      GO TO 695
0070 2000  X=SCAN(3,QEQ,QQQ,QVQ,0,0,P)
0071      IF (X.NE.1) GOTO 2010
      C      SET BIT 8
0073      CODE(Y)=CODE(Y)+256
0074      IF (NCOL(P+1).NE.QBQ.AND.NCOL(P+1).NE.QAQ) GO TO 696
0076      IF (NCOL(P-3).NE.QOQ.AND.NCOL(P-3).NE.Q1Q.AND.NCOL(P-3).NE.Q2Q
      1.AND.NCOL(P-3).NE.Q3Q) GO TO 696
0078      IF (NCOL(P+2).NE.QER.AND.NCOL(P+2).NE.QMQ) GO TO 696
0080      IF (NCOL(P+6).NE.QHR.AND.NCOL(P+6).NE.QER) GO TO 696
0082      GO TO 695
0083 2010  X=SCAN(3,QXQ,QQQ,QRQ,0,0,P)
0084      IF (X.NE.1) GO TO 2020
      C      SET BITS 8,10
0086      CODE(Y)=CODE(Y)+256+64
0087      IF (NCOL(P+1).NE.QBQ.AND.NCOL(P+1).NE.QAQ) GO TO 696
0089      IF (NCOL(P-3).NE.Q1Q.AND.NCOL(P-3).NE.Q2Q.AND.NCOL(P-3).NE.Q3Q)
      1GO TO 696
0091      IF (NCOL(P+2).NE.QER.AND.NCOL(P+2).NE.QMQ) GO TO 696
0093      IF (NCOL(P+6).NE.QHR.AND.NCOL(P+6).NE.QER) GO TO 696
0095      GO TO 695
0096 2020  X=SCAN(3,QNQ,QQQ,QRQ,0,0,P)
0097      IF (X.NE.1) GO TO 2030
      C      SET BIT 7
0099      CODE(Y)=CODE(Y)+512
0100      IF (NCOL(P+1).NE.QBQ.AND.NCOL(P+1).NE.QAQ) GO TO 696
0102      IF (NCOL(P-3).NE.Q1Q.AND.NCOL(P-3).NE.Q2Q.AND.NCOL(P-3).NE.Q3Q)
      1GO TO 696
0104      IF (NCOL(P+2).NE.QER.AND.NCOL(P+2).NE.QMQ) GO TO 696
0106      IF (NCOL(P+6).NE.QHR.AND.NCOL(P+6).NE.QER) GO TO 696
0108      GO TO 695
0109 2030  X=SCAN(3,QNQ,QAQ,QNQ,0,0,P)
0110      IF (X.NE.1) GOTO 2040
      C      SET BITS 7,10
0112      CODE(Y)=CODE(Y)+512+64
0113      IF (NCOL(P+1).NE.QBQ.AND.NCOL(P+1).NE.QAQ) GOTO 696
0115      IF (NCOL(P-3).NE.Q1Q.AND.NCOL(P-3).NE.Q2Q.AND.NCOL(P-3).NE.Q3Q)
      1GOTO 696
0117      IF (NCOL(P+2).NE.QER.AND.NCOL(P+2).NE.QMQ) GOTO 696
0119      IF (NCOL(P+6).NE.QHR.AND.NCOL(P+6).NE.QER) GOTO 696
0121      GOTO 695
0122 2040  X=SCAN(2,QOQ,QRQ,0,0,0,P)
0123      IF (X.NE.1) GO TO 2050
      C      SET BITS 7-8
0125      CODE(Y)=CODE(Y)+512+256

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

MON 28-FEB-77 09:30:01 PAGE 003
LOGICA.OBJ=LOGICA.FOR/NOSN/LI:1

```

0126      IF (NCOL(P+1).NE.QBQ.AND.NCOL(P+1).NE.QAQ) GO TO 696
0128      IF (NCOL(P-2).NE.Q1Q.AND.NCOL(P-2).NE.Q2Q.AND.NCOL(P-2).NE.Q3Q)
          1 GO TO 696
0130      IF (NCOL(P+2).NE.QER.AND.NCOL(P+2).NE.QMQ) GO TO 696
0132      IF (NCOL(P+6).NE.QHR.AND.NCOL(P+6).NE.QER) GO TO 696
0134      GO TO 695
0135 2050  X=SCAN(3,QAQ,QNQ,QDQ,0,0,P)
0136      IF (X.NE.1) GO TO 2060
          C      SET BITS 7,8,10
0138      CODE(Y)=CODE(Y)+512+256+64
0139      IF (NCOL(P+1).NE.QBQ.AND.NCOL(P+1).NE.QAQ) GO TO 696
0141      IF (NCOL(P-3).NE.Q1Q.AND.NCOL(P-3).NE.Q2Q.AND.NCOL(P-3).NE.Q3Q)
          1GO TO 696
0143      IF (NCOL(P+2).NE.QER.AND.NCOL(P+2).NE.QMQ) GO TO 696
0145      IF (NCOL(P+6).NE.QHR.AND.NCOL(P+6).NE.QER) GO TO 696
0147      GO TO 695
0148 2060  X=SCAN(3,QRQ,QIQ,QMQ,0,0,P)
0149      IF (X.NE.1) GO TO 2070
          C      SET BITS 7-9
0151      CODE(Y)=CODE(Y)+512+256+128
0152      IF (NCOL(P+1).NE.QBQ.AND.NCOL(P+1).NE.QAQ) GO TO 696
0154      IF (NCOL(P-3).NE.Q1Q.AND.NCOL(P-3).NE.Q2Q.AND.NCOL(P-3).NE.Q3Q)
          1GO TO 696
0156      IF (NCOL(P+2).NE.QER.AND.NCOL(P+2).NE.QMQ) GO TO 696
0158      IF (NCOL(P+6).NE.QHR.AND.NCOL(P+6).NE.QER) GO TO 696
0160      GO TO 695
0161 2070  X=SCAN(3-QNQ,QIQ,QMQ,0,0,P)
0162      IF (X.NE.1) GO TO 2080
          C      SET BITS 7-10
0164      CODE(Y)=CODE(Y)+512+256+128+64
0165      IF (NCOL(P+1).NE.QER.AND.NCOL(P+1).NE.QAQ) GO TO 696
0167      IF (NCOL(P-3).NE.Q1Q.AND.NCOL(P-3).NE.Q2Q.AND.NCOL(P-3).NE.Q3Q)
          1GO TO 696
0169      IF (NCOL(P+2).NE.QER.AND.NCOL(P+2).NE.QMQ) GO TO 696
0171      IF (NCOL(P+6).NE.QHR.AND.NCOL(P+6).NE.QER) GO TO 696
0173      GO TO 695
0174 2080  IF (NCOL(T+2).NE.QAR.OR.NCOL(T+3).NE.Q1Q.OR.NCOL(T+4).NE.QER)
          1GO TO 2100
          C      SET BIT 9
0176      CODE(Y)=CODE(Y)+128
0177      GO TO 695
0178 2100  IF (NCOL(T+2).NE.QER.AND.NCOL(T+2).NE.QHR) GO TO 2110
          C      SET BITS 9-10
0180      CODE(Y)=CODE(Y)+128+64
0181      GO TO 695
0182 2110  IF (NCOL(T+2).NE.QBR.OR.NCOL(T+3).NE.QBQ) GO TO 2160
0184      IF (NCOL(T+4).NE.QBR.OR.NCOL(T+5).NE.Q1Q.OR.NCOL(T+6).NE.QER)
          1GO TO 2140
          C      SET BITS 8-10
0186      CODE(Y)=CODE(Y)+256+128+64
0187      GO TO 695
0188 2140  IF (NCOL(T+4).NE.QER) GO TO 696
          C      SET BITS 8-9
0190      CODE(Y)=CODE(Y)+256+128
0191      GO TO 695
0192 2160  IF (NCOL(T+2).NE.QAR.OR.NCOL(T+3).NE.QBQ) GO TO 696

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

MON 28-FEB-77 09:30:01

PAGE 004

LOGICA.OBJ=LOGICA.FOR/NOSN/LI:1

```
0194      IF (NCOL(T+4).EQ.QAR.AND.NCOL(T+5).EQ.Q10.AND.NCOL(T+6).EQ.QER).  
          GO TO 695  
0196      IF (NCOL(T+4).EQ.QER) GO TO 2180  
0198 696   CONTINUE  
0199      CALL WRT(34,2)  
0200      RETURN  
          C      SET BIT 10  
0201 2180  CODE(Y)=CODE(Y)+64  
0202 695   CONTINUE  
0203      WRITE (1,699) MPAD, CODE(Y), COL  
0204 699   FORMAT (1X,05,4X,05,5X,80A1)  
0205      MPAD=MPAD+1  
0206      Y=Y+1  
0207      RETURN  
0208      END
```

>

1.2 M1710 Common Area

Communication between a host PDP-11 processor and an ESM loop CIE microprocessor is accomplished through the use of an M1710 General Purpose Interface board. A packet (256 bytes) can be transferred between the two machines in the form of 16-bit words at a maximum rate of 560 Kilobaud. A more detailed description of loop-host interfacing can be found in the ESM Hardware Maintenance Manual.

PDP-11 Software interfacing is accomplished by six registers which are provided by the M1710 board. The parameters of these six registers are tabulated below:

<u>Register Address</u>	<u>Array Element</u>	<u>Functional Description</u>
761000	DEVST(1)	Read Data Word
761002	DEVST(2)	Write Data Word
761004	DEVST(3)	Read Input Buffer Status
761006	DEVST(4)	Read Output Buffer Status
761010	DEVST(5)	Clear Input Buffer Status
761012	DEVST(6)	Clear Output Buffer Status

When a packet is to be read by the PDP-11, the input buffer status register (DEVST(3)) is odd. The packet is then read a word at a time using DEVST(1). Since the interface operates at a 560 Kilo-baud rate, a timing loop must be executed between word reads accomplished by a null DO loop from I=1 to 3 or more. A total of 129 word reads are performed with the first word read ignored. Consecutive bytes are stored in the 16-bit words in the order least significant (right), most significant (left) byte. After the packet is read DEVST(5) clears the Input Buffer Status Register to zero. Writing a packet to the loop is accomplished in a similar manner except DEVST(4) is odd when the output buffer is empty, DEVST(2) is used for 128 word writes, and DEVST(6) is used to clear the Output Buffer Status Register.

Application programs communicate with the six M1710 board registers via a COMMON BLOCK DATA program which is installed into a DEVICE type partition M1710. The procedure for generating this interface is listed below:

- a) Create the M1710 DEVICE partition using the MCR command,
SET /MAIN = M1710:7610:1:DEV

Note: It may be necessary to first remove any other partitions that overlap the memory space 761000-761100 using the SET /NOMAIN command.

b) Compile the M1710.FOR BLOCK DATA program listed below (M1710.FOR and M1710.OBJ both reside on ESM Tape #1).

c) Build the M1710 task and symbol table into UIC [1,1] using the task builder utility (TKB).

```
TKB [1,1]M1710.TSK/PI, TT0:/SH, DPO:[1,1]M1710.STB/-HD  
    = [20,20]M1710.OBJ
```

Note: For host processor B use DKO rather than DPO.

Enter Options:

```
STACK=0  
UNITS=0  
PAR= M1710:0:100
```

d) Install the M1710 task into the M1710 partition using the MCR command,

```
INS [1,1]M1710/PAR=M1710
```

e) For application programs interfacing to the ESM loop, include the FORTRAN statements

```
INTEGER DEVST(6)  
COMMON/M1710/DEVST
```

and use the TKB option when building the task,

```
COMMON=M1710:RW
```


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V01B-02
JIC=[20,20]

WED 09-MAR-77 18:17:27 PAGE 001
M1710. OBJ=M1710. FOR/NOSN/LI:1

BLOCK DATA
INTEGER DEVST(6)
COMMON /M1710/DEVST
END

1.3 User Language

The ESM User Language provides the Host-CRT dialogue described in Section 4.4 of the ESM User Manual. The User Language consists of a main program module (P0000) and ten subroutine modules (P1000, P2000, P3000, P3001, P4000, P4001, P5000, RDLOOP, WRLOOP, HST) residing on ESM Tape #1. The User Language Task is contained in UIC [20,20], and it exists in two forms: USRLN5.TSK for processor B loop 2, and USRLN1.TSK for processor A loop 1. The above listed modules are used for USRLN5. Modules P00001, P10001, P40001, P40011, and HST1 are used for USRLN1. Modules P2000, P3000, P3001, RDLOOP, and WRLOOP are the same for the two processors. The differences result primarily from the different addresses used in the LID pair header word (ICODE(3)). Header control character format is given in Table 5-1 of the ESM User Manual. Other differences are found in the main program module (P0000). Processor A uses the DECSCOPE designated as TTO: for the message log while Processor B uses DESCOPE TTL:. The message log contains the header and first two information bytes of all packets into the host processor and all dialogue messages destined to terminals. The input messages are displayed as octal 16-bit words with the first arriving byte stored as least significant (e.g., D2 D1 D4 D3 D6 D5 D8 D7).

The program normally waits for an input packet from the loop while checking the input buffer status residing in the M1710 common area. When the packet is received the program passes control to the proper module depending on the status of the dialogue for the terminal that sent the packet. The input is processed and responses are formatted and sent to the loop to prompt the sending terminal and provide system control functions when necessary.

The User Language is divided into five modes of operation:

1. CRT-to-CRT (P1000)
2. System Inquiry (P2000) : Operates on system file INFO.DAT.
3. System Control (P3000, P3001): Operates on system file INFO.DAT.
4. File Access (P4000, P4001, HST): Uses directory file EFDIR, and ATEC simulation files EFLOCF, EFTRKD, EFTERD, EFCKTD. Implements a distributed file system where records of a file are distributed between host processors A and B.
5. Card Format (P5000): Not yet implemented.

Host processor A does not have access to modes 2 and 3 so that system control update changes to INFO.DAT are only stored on processor B. Mode 5 on processor B contains a CRT broadcast demonstration where all terminals receive a common packet. The file MSG.DAT is used for holding 80 character records that are used for terminal displays.

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Other files on ESM Tape #1 related to User Language operation include:

- INFOPM.OBJ - This file contains a permanent copy of the system file INFO.DAT. To rebuild this file move INFOPM.OBJ from tape to disk using the FLX FB:80. fixed binary option, rename the file to INFOPM.DAT and then invoke the STESM command file which deletes the old INFO.DAT file and makes a new copy from INFOPM.DAT.

- EFDIR.OBJ, EFTERD.OBJ, EFCKTD.OBJ, EFTRKD.OBJ, EFLOCF.OBJ - These files are permanent copies of the ATEC simulation files. To rebuild these files move EFDIR.OBJ from tape to disk using the FLX FB:200. fixed binary option, and EFTERD.OBJ, EFCKTD.OBJ, EFTRKD.OBJ, EFLOCF.OBJ using FB:240. When files have been moved to disk, rename to drop the .OBJ, and build a consistent distributed file system without multiple copies using the record move utility (RCMV1, RCMV5).

- MSG.OBJ - This file contains a permanent copy of the message terminal display file (MSG.DAT). This file may be edited using the RXS11M EDI utility to obtain modified displays.

The following pages describe task building; overlay structure; variables, files, and library functions used; flowcharts and program listings for the ESM User Language.

Task Building:

```

TKB[20,20]USRLNG.TSK=[20,20]USROVL.ODL/MP,[1,1]SYSLIB/LB:$SHORT
Options:
UNITS=8
ACTFIL=8
COMMON=M1710:RW
ASG=TT1:1, SY0:2:3:4:5:6:7:8
MAXBUF=240

```

The RSX11M task builder utility (TKB) is used to build the User Language task from the object files of the main program and sub-routines and the overlay description language file. The commands listed above build the task. Shown below is the overlay structure of the program.

```

                                P0000(main program)

P1000      P2000      P3000      P4000      P5000      RDLOOP      WRLOOP      HS
                                P3001      P4001

```

This structure is coded in the overlay descriptor language file [20,20]USROVL.ODL.

MAIN PROGRAM - P0000:

Important Variables:

```

ST          NOREC          ILST
IND          ICODE          ICON
DEVST       NRCNO          NN

```

Important Files:

```
MSG.DAT
```

Fortran Library Functions Used:

```

IAND
ISHFT

```

SUBROUTINE P1000:

Important Variables:

```

ST          MOUT          NRCNO
IND          MSK          NOREC
ICODE       ICFLG          ICON

```

Important Files:

```

MSG.DAT
INFO.DAT

```

Fortran Library Functions Used:

```
IAND
```

SUBROUTINE P2000:

Important Variables:

```

ST          NRCNO          NDI
IND          NOREC          ICODE
ND          MOUT

```

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LSK NR
Important Files:
INFO.DAT
MSG.DAT
Fortran Library Functions Used:
IAND
ISHFT

SUBROUTINE P3000:

Important Variables:
ST MOUT NR ICFLG
IND NRCNO ICHAR INFA
LSK NOREC LIDTBD INV
ICODE ICON MSK NEWV
Important Files:
INFO.DAT
MSG.DAT
Fortran Library Functions Used:
IAND
ISHFT

SUBROUTINE P3001:

Important Variables:
ST NRCNO NDWPM
IND LSK NIM
NR ICODE ICHAR
NOREC MSK
Important Files:
INFO.DAT
Fortran Library Functions Used:
IAND

SUBROUTINE P4000:

Important Variables:
ST NRNCO ICODE OFIL KEYTYPEFM
IND NOREC DI MOUT IFAC
IFS LSK LU NOCHARKEY
Important Files:
EFDIR EFLOCF EFTRKD
MSG.DAT EFCKTD EFTERD
Fortran Library Function Used:
IAND

SUBROUTINE P4001:

Important Variables:
ST ICODE MOUT NOREC LINE IFAC
IND DI OFIL LSK IFAR
IFS LU NRCNO NOCHARKEY KEYTYPEFM
Important Files:
MSG.DAT EFLOCF EFTRKD
EFDIR EFCKTD EFTERD

Fortran Library Functions Used:
IAND

SUBROUTINE P5000:

Important Variables:

ST	NOREC	IND
LSK	NRCNO	ICODE

Important Files:

- - - - -

Fortran Library Functions Used:
IAND

SUBROUTINE RDLOOP:

Important Variables:

DEVST
ICODE

Important Files:

- - - - -

Fortran Library Functions Used:
MOD

SUBROUTINE WRLOOP:

Important Variables:

ILST ICODE
DEVST

Important Files:

- - - - -

Fortran Library Functions Used:
MOD

SUBROUTINE HST:

Important Variables:

ST	DI	OFIL	MOUT
NRCNO	NOREC	ICODE	

Important Files:

MSG.DAT	EFLOCF	EFTRAD
EFDIR	EFCATD	EFTERD

Fortran Library Functions Used:
IAND

DESCRIPTION OF VARIABLES USED:

ST - ST is the status array. ST is of type INTEGER and is dimensioned (3,9). The first parameter of ST (IND) indicates the user (CRT #1, 2 or 3). The second contains a maximum of 9 statuses. Status 1 is the module status. Status 2 is the CRT-CRT node designator. Only values of 4 and 8 are allowed. Status 3 is the type of system infor-

mation desired. Values of 1 - 4 are permitted. Status 4 is the node designator for modules P3000 and P3001 with values of 1 - 11 allowed. Status 5 is the network device parameter with values of 1 - 4 permissible. Status 6 contains the "KEY" to be checked in the directory. Status 7 is the record number of the file with the correct "KEY". Statuses 8 and 9 are different types of cross-referencing. Values of 1 to 3 are allowed.

IND - IND identifies the user as being CRT #1, 2 or 3.

DEVST - DEVST contains the six registers of the added COMMON area M1710 which corresponds to the M1710 Interface Board Memory Partition. This allows the PDP-11 to talk to the B7* microprocessor. DEVST is of type INTEGER and is dimensioned at 6.

ICODE - ICODE is formed by RDLOOP by getting the values of DEVST(1) from the B7* interface buffer. ICODE is dimensioned at 128. ICODE(3) is used for the LOGICAL I.D.'s.

ICON - ICON is the control packet array. It is put into ICODE and is written out to the loop. ICON is dimensioned at 128.

ICFLG - ICFLG is either 0 or 1. When equal to 1 it indicates to the modules that ICON exists and there is a control packet to be written to the loop.

ICHAR - ICHAR is used in the process of changing the header (ICODE(1 - 4)) from type INTEGER to type REAL*8. ICHAR is type INTEGER and is dimensioned at 4.

NEWV, LIDTBD, LDNFAD, NDWPMD - NEWV, LIDTBD, LDNFAD are used in P3000 and NDWPMD in P3001. They are all equivalent with ICHAR. They receive the value of ICHAR (INTEGER type) and hold it as type REAL*8. They hold the first 4 words that were sent by the loop to the PDP-11 processor.

ILST - ILST is sent as a parameter from -0000 to the module WRLOOP. It is equal to 0 before the first PDP-11 write to the loop and 1 after the first write.

NRCNO and NOREC - NRCNO and NOREC are pointers to the file MSG.DAT. Certain combinations of these two variables correspond to messages that are sent to the CRT's. Both are of type INTEGER.

NN - NN is used in P0000 as the pointer to the records to be read in from MSG.DAT into ICODE.

LU - LU is the logical unit number variable corresponding to the file that MOUT is to be written to. LU is equal to 3, 4, 5, or 6 respectively corresponding to the files EFLOCF, EFCKTD, EFTRKD, and EFTERD. LU is of type INTEGER.

MOUT - MOUT is of type REAL*8 and is dimensioned (10, 11). Records are read from MSG.DAT and INFO.DAT into MOUT and MOUT is written to the different files and eventually to the DECSCOPE.

DI - DI is the queue for the directory of the files. In P4000, DI is checked to see if the "KEY" exists. DI is of type INTEGER and is dimensioned at 100.

OFIL - Records from the files with logical unit numbers 3 -6 are written in OFIL. It is used on modules P4000 and P4001. It is of type REAL*8 and is dimensioned (10, 3).

LSK - LSK is the least significant mask. LSK equals a bit pattern 01111111. LSK and ICODE are used with the FORTRAN function IAND for bit manipulation.

MSK - MSK is the most significant mask. MSK equals a bit pattern of

0111111100000000. MSK and ICODE are used with the FORTRAN function IAND for bit manipulation.

IFAC - IFAC is dimensioned at 3 and is of type INTEGER. IFS is a local variable which holds the value of IFAC(IND). IFAC(1) holds the file to be accessed by CRT#1. Permissible values of IFS (or IFAC (1, 2 or 3)) are 1 -4. If the value is greater than 4, IFS is defaulted to 4.

ND - ND is of type INTEGER. It is used in P2000 as the value of the anding of LSK or MSK and ICODE.

NR - NR is the variable corresponding to the record number of the file MOUT is written to. NR is of type INTEGER.

NDI - NDI is equal to the hollerith equivalent of "NDI ". In P2000, a test is made to see if ND is equal to NDI. NDI is of type REAL*8.

INV - INV aids in the creation of the control packet. INV is the decimal representation of INVH, INVT and INVO combined. INV is of type INTEGER.

NFA, INFA - INFA is dimensioned at 4 and is of type INTEGER. Because INFA is equivalent with NFA, whatever value that goes into INFA is also stored in NFA. However, the value stored in NFA is of type REAL*8. NFA is then tested against the input and output array, MOUT.

NIM - NIM is equal to the hollerith equivalent of "NOT IMPL". NIM is of type REAL*8.

LINE, IFAR - LINE and IFAR are EQUIVALENT. LINE, dimensioned at 40, receives its values from ICODE as type INTEGER, transfers its value to IFAR, dimensioned at 10, as type REAL*8 through their equivalence, OFIL receives IFAR's values.

NOCHARKEY, KEYTYPEFM - NOCHARKEY and KEYTYPEFM are for display purposes. NOCHARKEY tells the number of characters per key and KEYTYPEFM tells the form the key is in (either letter - digit, alpha-numeric or digit). Both are dimensioned at 10 and are of type INTEGER.

DESCRIPTION OF FILES USED:

EFDIR - EFDIR is the directory file. It has a logical unit number of 2, 10 records, 100 words per record and is unformatted.

EFLOCF, EFCKTD, EFTRKD, EFTERD - These are the files ATEC - SIMULATION that EFDIR refers to. Respectively, their logical unit numbers are 3, 4, 5 and 6. Each contains 100 records with each record being 120 words in length. Each file is also formatted.

INFO.DAT - INFO.DAT is the system information file. It has a logical number of 7. The file has 396 records with 40 words per record. It is unformatted.

MSG.DAT - MSG.DAT contains all the messages to be displayed to the CRT's. It has a logical unit number of 8. It contains 211 records with each record being unformatted and 40 words in length.

DESCRIPTION OF THE FORTRAN LIBRARY FUNCTIONS USED:

IAND(m,n) - This function logically ands m and n bit by bit.

ISHFT(m,n) - m designates the argument to be shifted and n specifies the number of positions and the direction m is to be shifted.

MOD(I,J) - This function divides I by J and gives the value of the remainder. The value is of type INTEGER.

Table B gives the flowchart letter connectors and their corresponding positions in the User Language program.

TABLE B

FLOWCHART LETTER CONNECTOR	PROGRAM LOCATION (MODULE - LABEL)
A	P0000 - 25
B	P0000 - 12
C	P0000 - 250
D	P0000 - 330
G	P1000 - 14
H	P1000 - 53
I	P1000 - 54
J	P1000 - 30
K	P2000 - 53
L	P2000 - 72
M	P2000 - 51
N	P3000 - 102
O	P4000 - 22
P	P4000 - 23
Q	P4000 - 24
R	P4000 - 25
T	P4000 - 575
U	P4000 - 580
V	P4000 - 585
W	P4001 - 28
X	P4001 - 29
Y	P4001 - 30
Z	P4001 - 31
AA	P4001 - 32
BB	P4001 - 34
CC	P5000 - 21
DD	P5000 - 24
EE	P3000 - 250

P0000

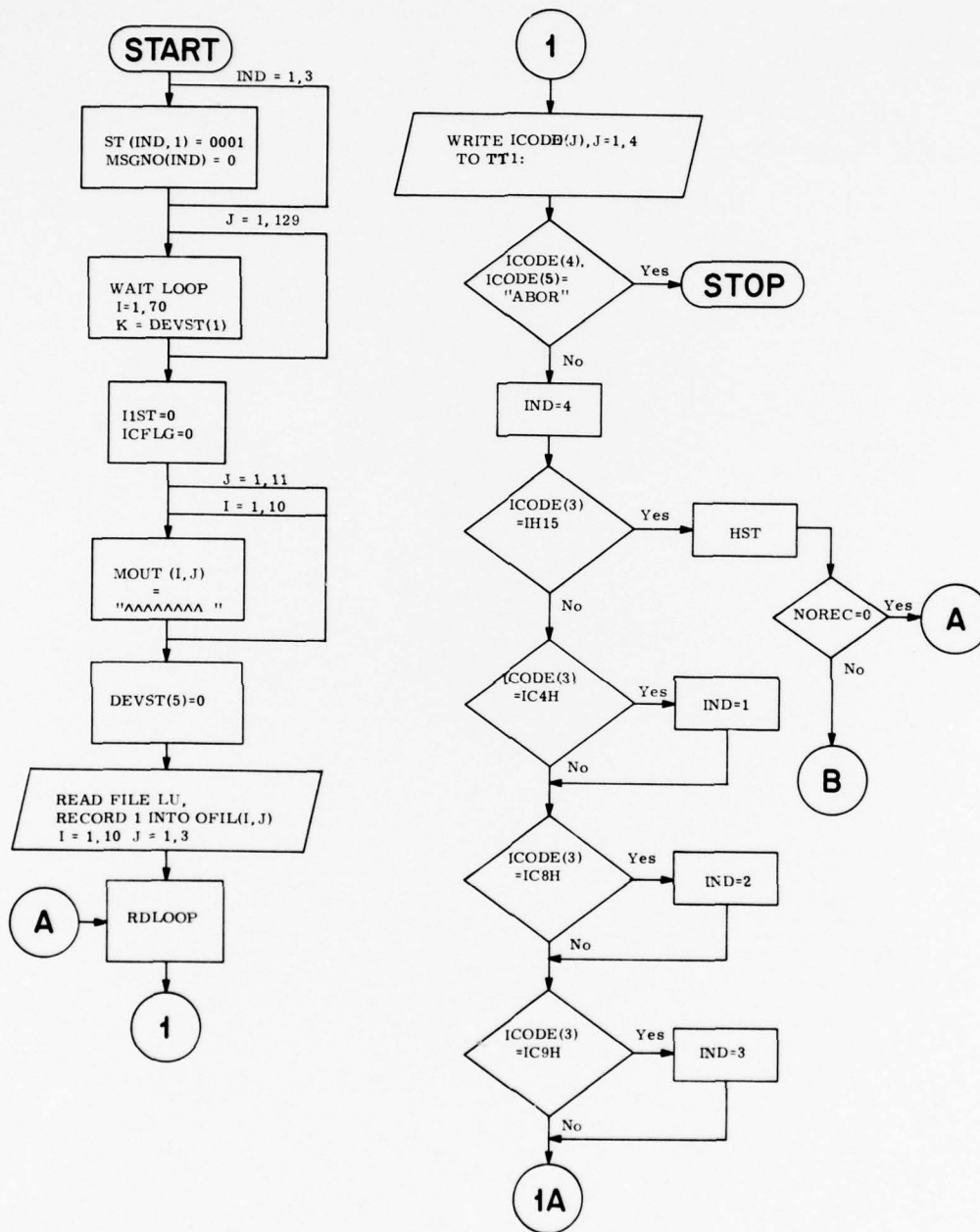


Figure 1-9. P0000

P0000 (cont.)

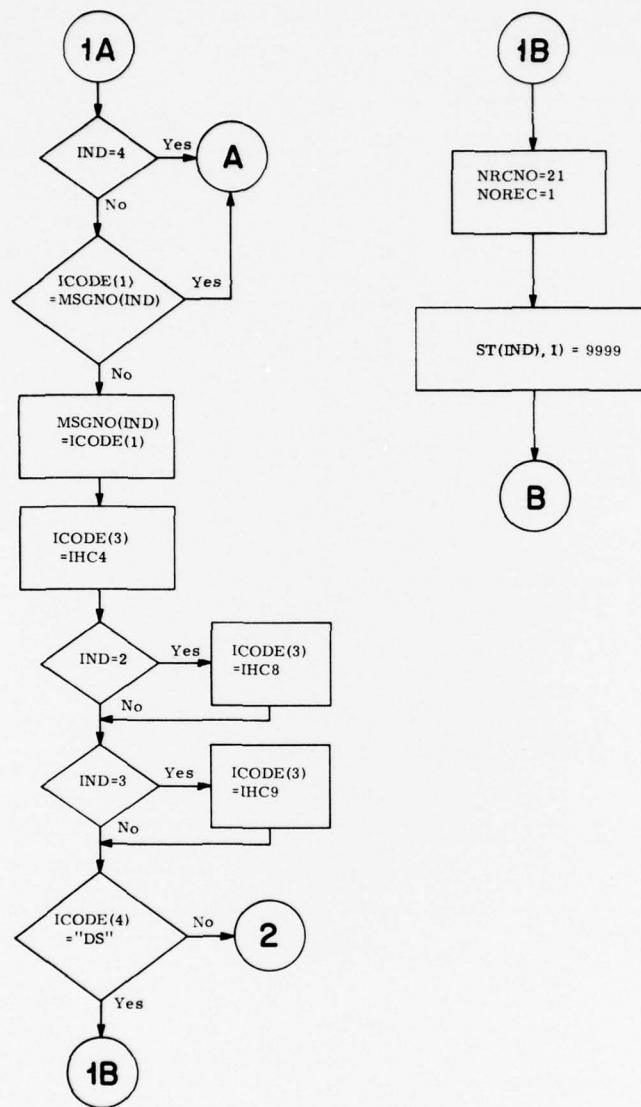


Figure 1-9. (Cont.)

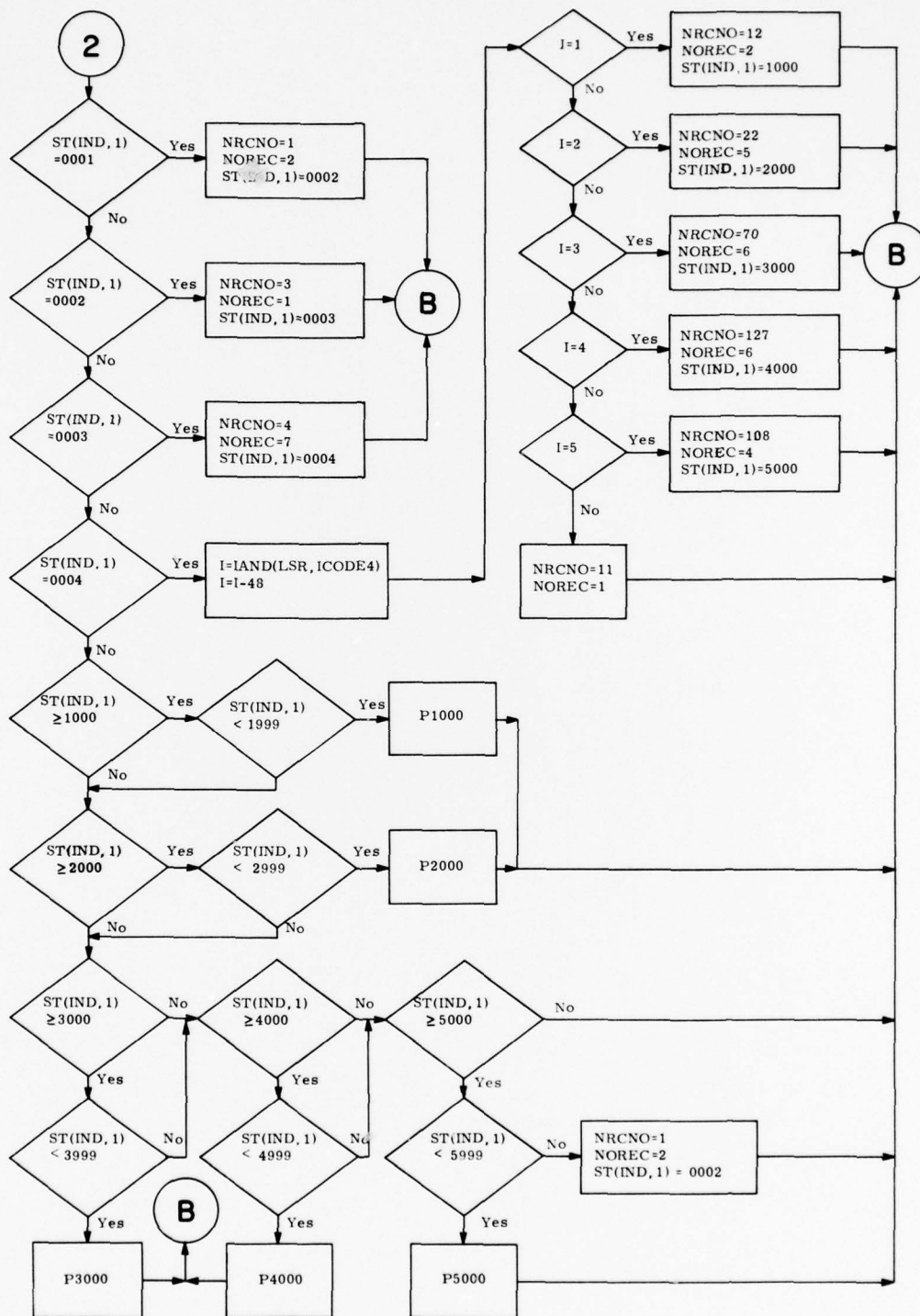


Figure 1-9. (Cont.)

P0000 (cont.)

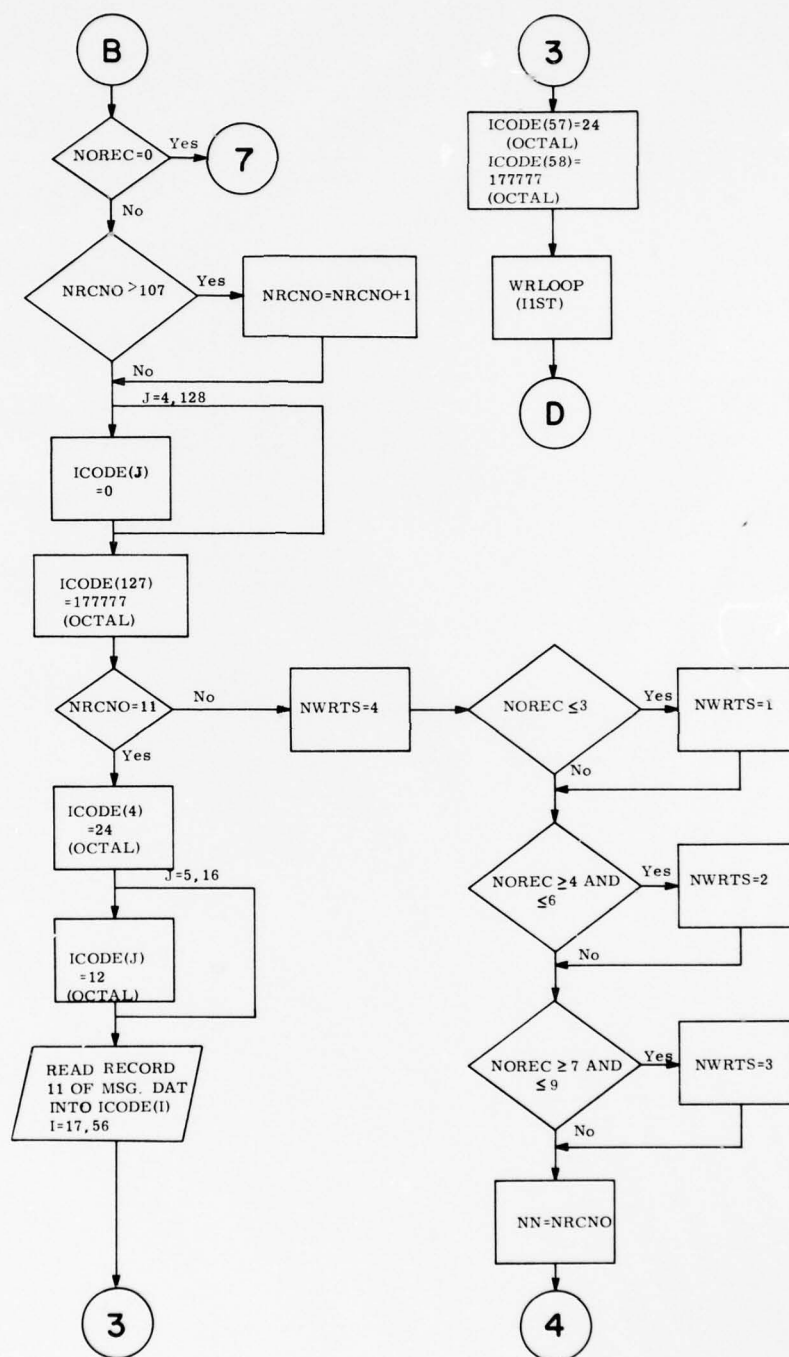


Figure 1-9. (Cont.)

P0000 (cont.)

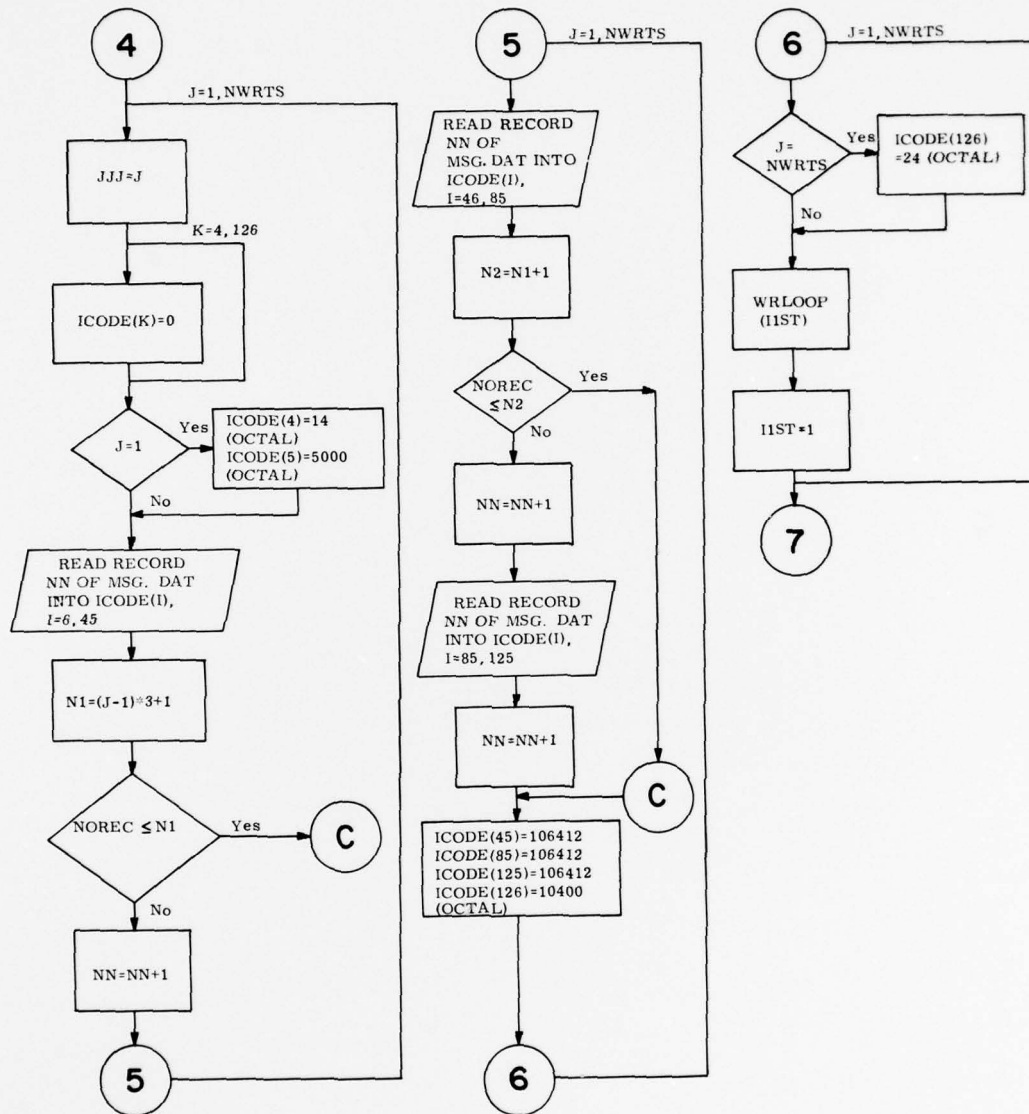


Figure 1-9. (Cont.)

P0000 (cont.)

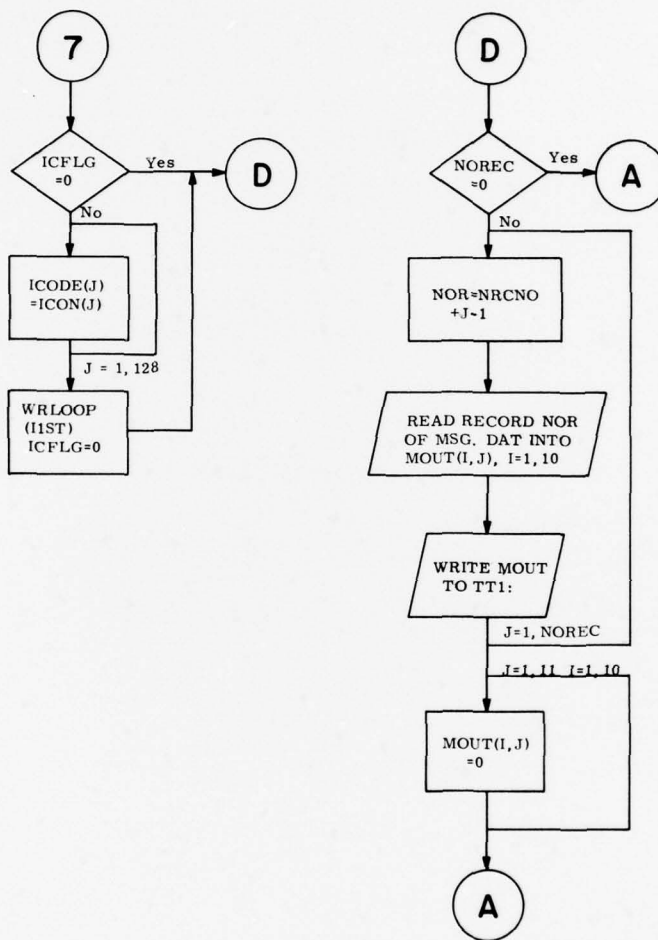


Figure 1-9. (Cont.)

FORTAN IV V01B-02
CORE=08K, UIC=[20,20]

FRI 18-MAR-77 18:40:56

PAGE 001

P0000.OBJ=P0000.FOR/NOSN/DE/LI:1

```

C
C   PRELIM USER LANG PROG
C   WRITTEN IN FORTAN IV
C
0001  REAL*8 NDI,LID,TAB,NWD,MOUT
      1,SK8,CRTINMSG,ND
0002  REAL*8 Q2Q,Q4Q,KEYTYPEFM,OFIL,DI
0003  INTEGER ST
0004  INTEGER DEVST(6)
0005  DIMENSION OFIL(10,3),DI(100)
0006  DIMENSION MSGNO(3)
0007  COMMON /M1710/DEVST
0008  COMMON /LOOP/ ICODE(128),MSK,LSK
0009  DATA MSK,LSK/'77400','177/
0010  COMMON      NDI,LID,TAB,NWD,ST(3,9),IND
0011  COMMON /U000/ MOUT(10,11),NRCNO,NOREC
0012  COMMON /DSK/I1,I2,I3,I4,I5,I6,I16
0013  COMMON /MD04/NOCHARKEY(10),KEYTYPEFM(10)
0014  COMMON /F01/IFAC(3)
0015  COMMON /CPAC/ICON(128),ICFLG
0016  COMMON /S230/ ND
0017  DATA NDI,LID,TAB,NWD,SK8/'NDI      ',
      1'LID      ','TAB      ','NNWD      ','      '//
0018  DATA ISPC /'120240/
0019  DATA ICRLF /'106412/
0020  DATA LF,LHOME,LEDP,LFF4,LFF5,IDC1/'12','24','177777',
      1'14','5000','10400/
0021  DATA IC4H,IHC4,IC3H,IHC8/'2005','2404','4005','2410/
0022  DATA ILO/'51504/
0023  DATA IC9H,IHC9/'4405','2411/
0024  DATA IH15/'405/
0025  15  FORMAT(1X,10A8)
C      START DIALOGUE
C      IND IS THE PAIR INDEX NUMBER
C      ST IS THE STATUS ROUTINE # ARRAY
0026  DO 20 IND=1,3
0027  MSGNO(IND)=0
0028  20  ST(IND,1)=0001
C      THROW AWAY PACKET TO HAVE B7* INP BUF INIT EMPTY
0029  DO 130 J=1,129
0030  DO 140 I=1,70
0031  140  CONTINUE
0032  130  K=DEVST(1)
0033  I1ST=0
0034  ICFLG=0
0035  DO 22 J=1,11
0036  DO 22 I=1,10
0037  22  MOUT(I,J)=SK8
0038  CALL ASSIGN(1,'TT1:')
0039  CALL ASSIGN (2,'EFDIR')
0040  DEFINE FILE 2(10,100,U,I1)
0041  CALL ASSIGN(3,'EFLOCF')
0042  DEFINE FILE 3(100,120,U,I2)
0043  CALL ASSIGN(4,'EFCKTD')
0044  DEFINE FILE 4(100,120,U,I3)
0045  CALL ASSIGN(5,'EFTRKD')

```

FORTRAN IV V01B-02 FRI 18-MAR-77 18:40:56 PAGE 002
 CORE=08K, UIC=[20,20] P0000.OBJ=P0000.FOR/NOSN/DE/LI:1

```

0046      DEFINE FILE 5(100,120,U,I4)
0047      CALL ASSIGN(6,'EFTERD')
0048      DEFINE FILE 6(100,120,U,I5)
0049      CALL ASSIGN(7,'INFO.DAT')
0050      DEFINE FILE 7(396,40,U,I6)
0051      CALL ASSIGN(8,'MSG.DAT')
0052      DEFINE FILE 8(211,40,U,I16)
0053      DEVST(5)=0
0054      DO 23 LU=3,6
0055 23 READ(LU,1,ERR=17)((OFIL(I,J),I=1,10),J=1,3)
0056 25 CALL RDLOOP
      C      CALC IND, FORM LIDS
0057 D      WRITE(1,16)(ICODE(J),J=1,4)
0058 D16     FORMAT(1X,'HEADER= ',408)
0059       IF (ICODE(4) .EQ. '41101' .AND. (ICODE(5) .EQ. '51117' .OR.
1      ICODE(5) .EQ. '151317')) GOTO 500
0061       IND=4
0062       IF (ICODE(3) .EQ. IH15) GOTO 700
0064       IF (ICODE(3) .EQ. IC4H) IND=1
0066       IF (ICODE(3) .EQ. IC8H) IND=2
0068       IF (ICODE(3) .EQ. IC9H) IND=3
0070       IF (IND .EQ. 4) GOTO 25
0072       IF (ICODE(1) .EQ. MSGNO(IND)) GOTO 25
0074       MSGNO(IND)=ICODE(1)
0075       ICODE(3)=IHC4
0076       IF (IND .EQ. 2) ICODE(3)=IHC8
0078       IF (IND .EQ. 3) ICODE(3)=IHC9
0080       IF (ICODE(4) .NE. ILO) GOTO '630
0082       NRCNO=21
0083       NOREC=1
0084       ST(IND,1)=9999
0085       GOTO 12
0086 700 CALL HST
0087       IF (NOREC .EQ. 0) GOTO 25
0089       GOTO 12
0090 630 IF (ST(IND,1) .EQ. 0001) GOTO 51
0092       IF (ST(IND,1) .EQ. 0002) GOTO 52
0094       IF (ST(IND,1) .EQ. 0003) GOTO 53
0096       IF (ST(IND,1) .EQ. 0004) GOTO 54
0098       IF (ST(IND,1) .GE. 1000) GOTO 1
0100       GOTO 2
0101 1   IF (ST(IND,1) .LE. 1999) GOTO 61
0103 2   IF (ST(IND,1) .GE. 2000) GOTO 3
0105       GOTO 4
0106 3   IF (ST(IND,1) .LE. 2999) GOTO 62
0108 4   IF (ST(IND,1) .GE. 3000) GOTO 5
0110       GOTO 6
0111 5   IF (ST(IND,1) .LE. 3999) GOTO 63
0113 6   IF (ST(IND,1) .GE. 4000) GOTO 7
0115       GOTO 8
0116 7   IF (ST(IND,1) .LE. 4999) GOTO 64
0118 8   IF (ST(IND,1) .GE. 5000) GOTO 9
0120       GOTO 12
0121 9   IF (ST(IND,1) .LE. 5999) GOTO 65
0123 51  NRCNO=1
0124       NOREC=2

```


FORTRAN IV V01R-02
CORE=08K, UIC=[20,20]FRI 18-MAR-77 18:40:56 PAGE 003
P0000.OBJ=P0000.FOR/NOSN/DE/LI:1

```
0125      ST(IND,1)=0002
0126      GOTO 12
0127      52 NRCNO=3
0128      NOREC=1
0129      ST(IND,1)=0003
0130      GOTO 12
0131      53 NRCNO=4
0132      NOREC=7
0133      ST(IND,1)=0004
0134      GOTO 12
0135      54 I=IAND(LSK,ICODE(4))
0136      I=I-48
0137      IF (I .EQ. 1) GOTO 101
0139      IF (I .EQ. 2) GOTO 102
0141      IF (I .EQ. 3) GOTO 103
0143      IF (I .EQ. 4) GOTO 104
0145      IF (I .EQ. 5) GOTO 105
0147      17 NRCNO=11
0148      NOREC=1
0149      GOTO 12
0150      101 NRCNO=12
0151      NOREC=2
0152      ST(IND,1)=1000
0153      GOTO 12
0154      102 NRCNO=22
0155      NOREC=5
0156      ST(IND,1)=2000
0157      GOTO 12
0158      103 NRCNO=70
0159      NOREC=6
0160      ST(IND,1)=3000
0161      GOTO 12
0162      104 NRCNO=127
0163      NOREC=6
0164      ST(IND,1)=4000
0165      GOTO 12
0166      105 NRCNO=108
0167      NOREC=4
0168      ST(IND,1)=5000
0169      GOTO 12
0170      61 CALL F1000
0171      GOTO 12
0172      62 CALL F2000
0173      GOTO 12
0174      63 CALL F3000
0175      GOTO 12
0176      64 CALL F4000
0177      GOTO 12
0178      65 CALL F5000
0179      12 IF (NOREC .EQ. 0) GOTO 710
C      WRITE TO LOOP
0181      IF (NRCNO .GE. 107) NRCNO=NRCNO+1
0183      DO 200 J=4,128
0184      200 ICODE(J)=0
0185      ICODE(127)=LEOP
0186      IF (NRCNO .NE. 11) GOTO 210
```

FORTTRAN IV V01B-02
CORE=08K, UIC=120,201

FRI 18-MAR-77 18:40:56 PAGE 004
P0000.OBJ=P0000.FOR/NOSN/DE/LI:1

```

0188      ICODE(4)=LHOME
0189      DO 220 J=5,16
0190      220 ICODE(J)=LF
0191      READ(8'11)(ICODE(I),I=17,56)
0192      ICODE(57)=LHOME
0193      ICODE(58)=LEOF
0194      CALL WRLOOP(I1ST)
0195      GOTO 330
0196      210 NWRTS=4
0197      IF (NOREC .LE. 3) NWRTS=1
0199      IF (NOREC .GE. 4 .AND. NOREC .LE. 6) NWRTS=2
0201      IF (NOREC .GE. 7 .AND. NOREC .LE. 9) NWRTS=3
0203      NN=NRCNO
0204      DO 310 J=1,NWRTS
0205      JJJ=J
0206      DO 450 K=4,126
0207      450 ICODE(K)=0
0208      IF (J .EQ. 1) ICODE(4)=LFF4
0210      IF (J .EQ. 1) ICODE(5)=LFF5
0212      READ(8'NN,ERR=500)(ICODE(I),I=6,45)
0213      N1=(J-1)*3+1
0214      IF (NOREC .LE. N1) GOTO 250
0216      NN=NN+1
0217      READ(8'NN,ERR=500)(ICODE(I),I=46,85)
0218      N2=N1+1
0219      IF (NOREC .LE. N2) GOTO 250
0221      NN=NN+1
0222      READ(8'NN,ERR=500)(ICODE(I),I=86,125)
0223      NN=NN+1
0224      250 ICODE(45)=ICRLF
0225      ICODE(85)=ICRLF
0226      ICODE(125)=ICRLF
0227      ICODE(126)=IDC1
0228      IF (J .EQ. NWRTS) ICODE(126)=LHOME
0230      CALL WRLOOP(I1ST)
0231      I1ST=1
0232      310 CONTINUE
0233      710 IF (ICFLG .EQ. 0) GOTO 330
0235      DO 510 J=1,128
0236      510 ICODE(J)=ICON(J)
0237      CALL WRLOOP(I1ST)
0238      ICFLG=0
0239      330 IF (NOREC .EQ. 0) GOTO 25
C      WRITE OUT SCREEN
0241      DO 70 J=1,NOREC
0242      NOR=NRCNO+J-1
0243      READ(8'NOR)(MOUT(I,J),I=1,10)
0244      70 WRITE(1,15)(MOUT(I,J),I=1,10)
0245      DO 80 J=1,11
0246      DO 80 I=1,10
0247      80 MOUT(I,J)=0
0248      GOTO 25
0249      500 CONTINUE
0250      END

```

FORTTRAN IV V01R-02
CORE=08K, UIC=[20,20]

FRI 18-MAR-77 18:51:18 PAGE 001
P00001.OBJ=P00001.FOR/NOSN/DE/LI:1

```

C
C   PRELIM USER LANG PROG
C   WRITTEN IN FORTTRAN IV
C
0001   REAL*8 NDI,LID,TAB,NWD,MOUT
      1,SK8,CRTINMSG,ND
0002   REAL*8 Q2Q,Q4Q,KEYTYPEFM,OFIL,DI
0003   INTEGER ST
0004   INTEGER DEVST(6)
0005   DIMENSION OFIL(10,3),DI(100)
0006   DIMENSION MSGNO(3)
0007   COMMON /M1710/DEVST
0008   COMMON /LOOP/ ICODE(128),MSK,LSK
0009   DATA MSK,LSK/'77400','177/
0010   COMMON      NDI,LID,TAB,NWD,ST(3,9),IND
0011   COMMON /U000/ MOUT(10,11),NRCNO,NOREC
0012   COMMON /DSK/I1,I2,I3,I4,I5,I6,I16
0013   COMMON /MD04/NOCHARKEY(10),KEYTYPEFM(10)
0014   COMMON /F01/IFAC(3)
0015   COMMON /CFAC/ICON(128),ICFLG
0016   COMMON /S230/ ND
0017   DATA NDI,LID,TAB,NWD,SK8/'NDI      ',
      1'LID      ','TAB      ','NNWD      ','      '/
0018   DATA ISPC /'120240/
0019   DATA ICRLF /'106412/
0020   DATA LF,LHOME,LEDP,LFF4,LFF5,IDC1/'12','24','177777',
      1'14','5000','10400/
0021   DATA IC4H,IHC4,IC6H,IHC8/'2001','404','4001','410/
0022   DATA ILO/'51504/
0023   DATA IC9H,IHC9/'4401','411/
0024   DATA IH15/'405/
0025   DATA IH51/'2401/
0026   15  FORMAT(1X,10A8)
      C   START DIALOGUE
      C   IND IS THE PAIR INDEX NUMBER
      C   ST IS THE STATUS ROUTINE # ARRAY
0027   DO 20 IND=1,3
0028   MSGNO(IND)=0
0029   20  ST(IND,1)=0001
      C   THROW AWAY PACKET TO HAVE B7* INP BUF INIT EMPTY
0030   DO 130 J=1,129
0031   DO 140 I=1,70
0032   140 CONTINUE
0033   130 K=DEVST(1)
0034   I1ST=0
0035   ICFLG=0
0036   DO 22 J=1,11
0037   DO 22 I=1,10
0038   22  MOUT(I,J)=SK8
0039   CALL ASSIGN(1,'TTO:')
0040   CALL ASSIGN (2,'EFDIR')
0041   DEFINE FILE 2(10,100,U,I1)
0042   CALL ASSIGN(3,'EFLOC')
0043   DEFINE FILE 3(100,120,U,I2)
0044   CALL ASSIGN(4,'EFCKTD')
0045   DEFINE FILE 4(100,120,U,I3)

```

FORTRAN IV VOIR-02 FRI 18-MAR-77 18:51:18 PAGE 002
 CORE=08K, UIC=[20,20] P00001.OBJ=P00001.FOR/NOSN/DE/LI:1

```

0046      CALL ASSIGN(5,'EFTKRD')
0047      DEFINE FILE 5(100,120,U,I4)
0048      CALL ASSIGN(6,'EFTERD')
0049      DEFINE FILE 6(100,120,U,I5)
0050      CALL ASSIGN(7,'INFO.DAT')
0051      DEFINE FILE 7(396,40,U,I6)
0052      CALL ASSIGN(8,'MSG.DAT')
0053      DEFINE FILE 8(211,40,U,I16)
0054      DEVST(5)=0
0055      DO 23 LU=3,6
0056 23 READ(LU,1,ERR=17)((OFIL(I,J),I=1,10),J=1,3)
0057 25 CALL RDLOOP
      C      CALC IND, FORM LIDS
0058 D      WRITE(1,16)(ICODE(J),J=1,4)
0059 D16     FORMAT(1X,'HEADER= ',408)
0060      IF (ICODE(4) .EQ. '41101 .AND. (ICODE(5) .EQ. '151317 .OR.
1      ICODE(5) .EQ. '51117)) GOTO 500
0062      IND=4
0063      IF (ICODE(3) .EQ. IH51) GOTO 700
0065      IF (ICODE(3) .EQ. IC4H) IND=1
0067      IF (ICODE(3) .EQ. IC8H) IND=2
0069      IF (ICODE(3) .EQ. IC9H) IND=3
0071      IF (IND .EQ. 4) GOTO 25
0073      IF (ICODE(1) .EQ. MSGNO(IND)) GOTO 25
0075      MSGNO(IND)=ICODE(1)
0076      ICODE(3)=IHC4
0077      IF (IND .EQ. 2) ICODE(3)=IHC8
0079      IF (IND .EQ. 3) ICODE(3)=IHC9
0081      IF (ICODE(4) .NE. ILO) GOTO 630
0083      NRCNO=21
0084      NOREC=1
0085      ST(IND,1)=9999
0086      GOTO 12
0087 700 CALL HST
0088      IF (NOREC .EQ. 0) GOTO 25
0090      GOTO 12
0091 630 IF (ST(IND,1) .EQ. 0001) GOTO 51
0093      IF (ST(IND,1) .EQ. 0002) GOTO 52
0095      IF (ST(IND,1) .EQ. 0003) GOTO 53
0097      IF (ST(IND,1) .EQ. 0004) GOTO 54
0099      IF (ST(IND,1) .GE. 1000) GOTO 1
0101      GOTO 2
0102 1  IF (ST(IND,1) .LE. 1999) GOTO 61
0104 2  IF (ST(IND,1) .GE. 2000) GOTO 3
0106      GOTO 4
0107 3  IF (ST(IND,1) .LE. 2999) GOTO 62
0109 4  IF (ST(IND,1) .GE. 3000) GOTO 5
0111      GOTO 6
0112 5  IF (ST(IND,1) .LE. 3999) GOTO 63
0114 6  IF (ST(IND,1) .GE. 4000) GOTO 7
0116      GOTO 8
0117 7  IF (ST(IND,1) .LE. 4999) GOTO 64
0119 8  IF (ST(IND,1) .GE. 5000) GOTO 9
0121      GOTO 12
0122 9  IF (ST(IND,1) .LE. 5999) GOTO 65
0124      51 NRCNO=1

```

FORTRAN IV V01B-02
CORE=08K, UIC: E20,203FRI 18 MAR 77 18:51:10 PAGE 003
P00001.OBJ-P00001.FOR/NOSN/DE/LI:1

```
0125      NOREC=2
0126      ST(IND,1)=0002
0127      GOTO 12
0128      52 NRCNO=3
0129      NOREC=1
0130      ST(IND,1)=0003
0131      GOTO 12
0132      53 NRCNO=4
0133      NOREC=7
0134      ST(IND,1)=0004
0135      GOTO 12
0136      54 I=IAND(LSK, ICODE(4))
0137      I=I-48
0138      IF (I .EQ. 1) GOTO 101
0140      IF (I .EQ. 2) GOTO 102
0142      IF (I .EQ. 3) GOTO 103
0144      IF (I .EQ. 4) GOTO 104
0146      IF (I .EQ. 5) GOTO 105
0148      17 NRCNO=11
0149      NOREC=1
0150      GOTO 12
0151      101 NRCNO=12
0152      NOREC=2
0153      ST(IND,1)=1000
0154      GOTO 12
0155      102 NRCNO=21
0156      NOREC=1
0157      ST(IND,1)=9999
0158      GOTO 12
0159      103 NRCNO=21
0160      NOREC=1
0161      ST(IND,1)=9999
0162      GOTO 12
0163      104 NRCNO=127
0164      NOREC=6
0165      ST(IND,1)=4000
0166      GOTO 12
0167      105 NRCNO=108
0168      NOREC=4
0169      ST(IND,1)=5000
0170      GOTO 12
0171      61 CALL F1000
0172      GOTO 12
0173      62 CALL F2000
0174      GOTO 12
0175      63 CALL F3000
0176      GOTO 12
0177      64 CALL F4000
0178      GOTO 12
0179      65 CALL F5000
0180      12 IF (NOREC .EQ. 0) GOTO 710
C      WRITE TO LOOP
0182      IF (NRCNO .GE. 107) NRCNO=NRCNO+1
0184      DO 200 J=4,128
0185      200 ICODE(J)=0
0186      ICODE(127)=LEOP
```


FORTTRAN IV V01B-02
CORE=08K, UIC=C20,20J

FRI 18-MAR-77 18:51:18 PAGE 004
P00001.OBJ=P00001.FOR/NOSN/DE/LI:1

```

0187      IF (NRCNO .NE. 11) GOTO 210
0189      ICODE(4)=LHOME
0190      DO 220 J=5,16
0191 220    ICODE(J)=LF
0192      READ(8'11)(ICODE(I),I=17,56)
0193      ICODE(57)=LHOME
0194      ICODE(58)=LEOP
0195      CALL WRLOOP(I1ST)
0196      GOTO 330
0197 210    NWRTS=4
0198      IF (NOREC .LE. 3) NWRTS=1
0200      IF (NOREC .GE. 4 .AND. NOREC .LE. 6) NWRTS=2
0202      IF (NOREC .GE. 7 .AND. NOREC .LE. 9) NWRTS=3
0204      NN=NRCNO
0205      DO 310 J=1,NWRTS
0206      JJJ=J
0207      DO 450 K=4,126
0208 450    ICODE(K)=0
0209      IF (J .EQ. 1) ICODE(4)=LFF4
0211      IF (J .EQ. 1) ICODE(5)=LFF5
0213      READ(8'NN,ERR=500)(ICODE(I),I=6,45)
0214      N1=(J-1)*3+1
0215      IF (NOREC .LE. N1) GOTO 250
0217      NN=NN+1
0218      READ(8'NN,ERR=500)(ICODE(I),I=46,85)
0219      N2=N1+1
0220      IF (NOREC .LE. N2) GOTO 250
0222      NN=NN+1
0223      READ(8'NN,ERR=500)(ICODE(I),I=86,125)
0224      NN=NN+1
0225 250    ICODE(45)=ICRLF
0226      ICODE(85)=ICRLF
0227      ICODE(125)=ICRLF
0228      ICODE(126)=IDC1
0229      IF (J .EQ. NWRTS) ICODE(126)=LHOME
0231      CALL WRLOOP(I1ST)
0232      I1ST=1
0233 310    CONTINUE
0234 710    IF (ICFLG .EQ. 0) GOTO 330
0236      DO 510 J=1,128
0237 510    ICODE(J)=ICON(J)
0238      CALL WRLOOP(I1ST)
0239      ICFLG=0
0240 330    IF (NOREC .EQ. 0) GOTO 25
C      WRITE OUT SCREEN
0242      DO 70 J=1,NOREC
0243      NOR=NRCNO+J-1
0244      READ(8'NOR)(MOUT(I,J),I=1,10)
0245 70    WRITE(1,15)(MOUT(I,J),I=1,10)
0246      DO 80 J=1,11
0247      DO 80 I=1,10
0248 80    MOUT(I,J)=0
0249      GOTO 25
0250 500    CONTINUE
0251      END

```

P1000

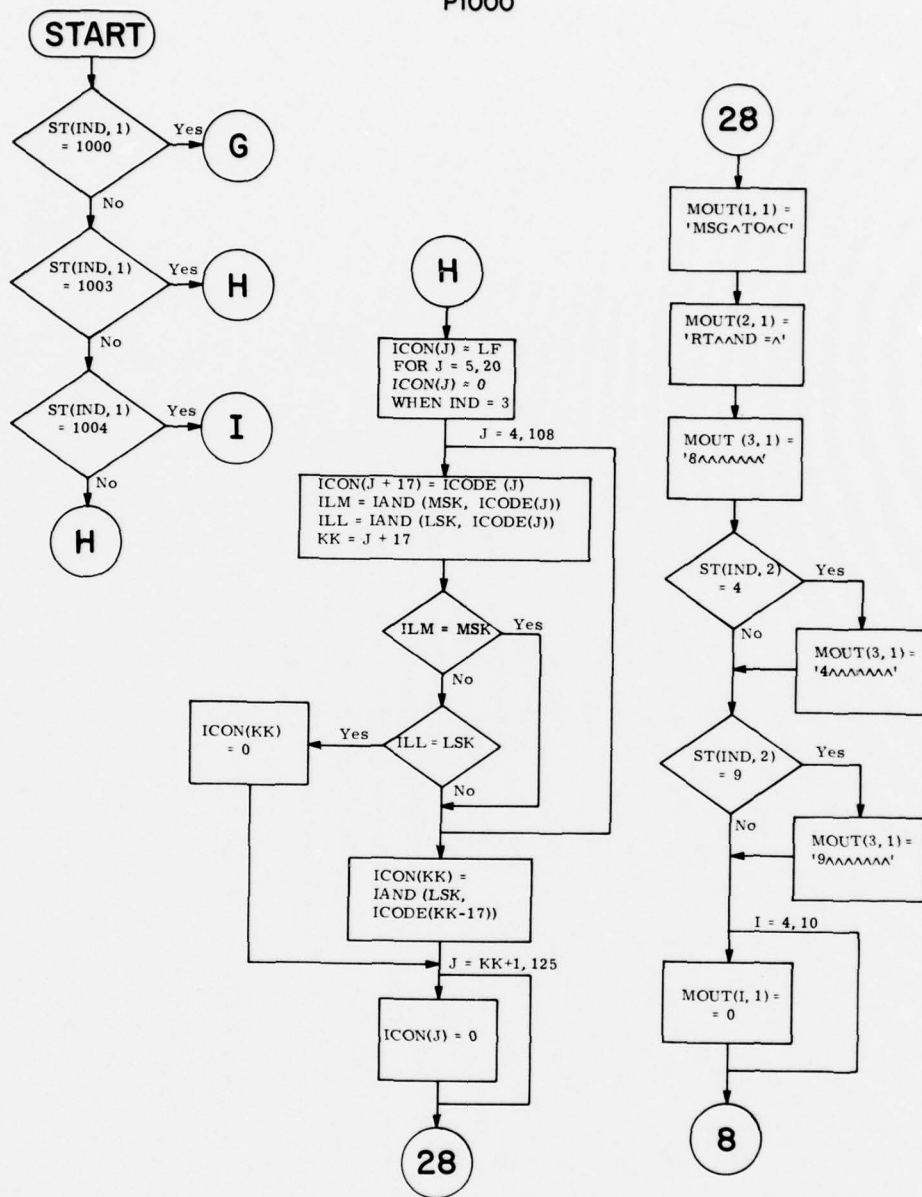


Figure 1-10. P1000

P1000 (cont.)

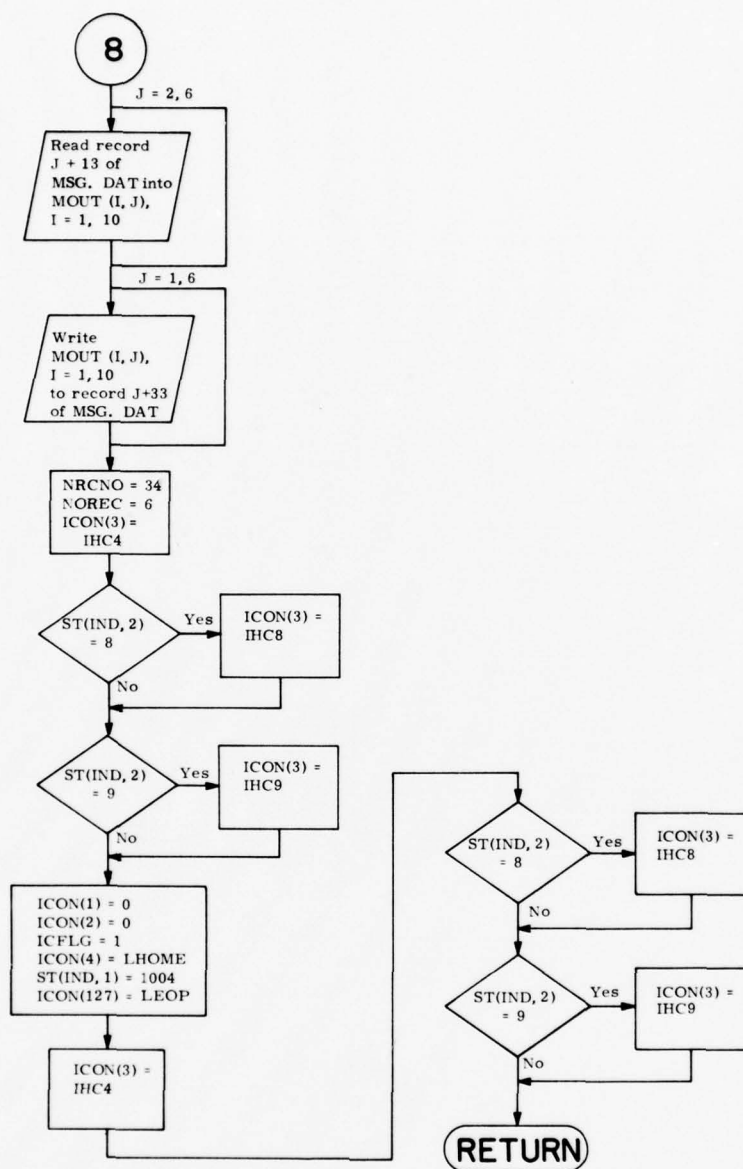


Figure 1-10. (Cont.)

P1000 (cont.)

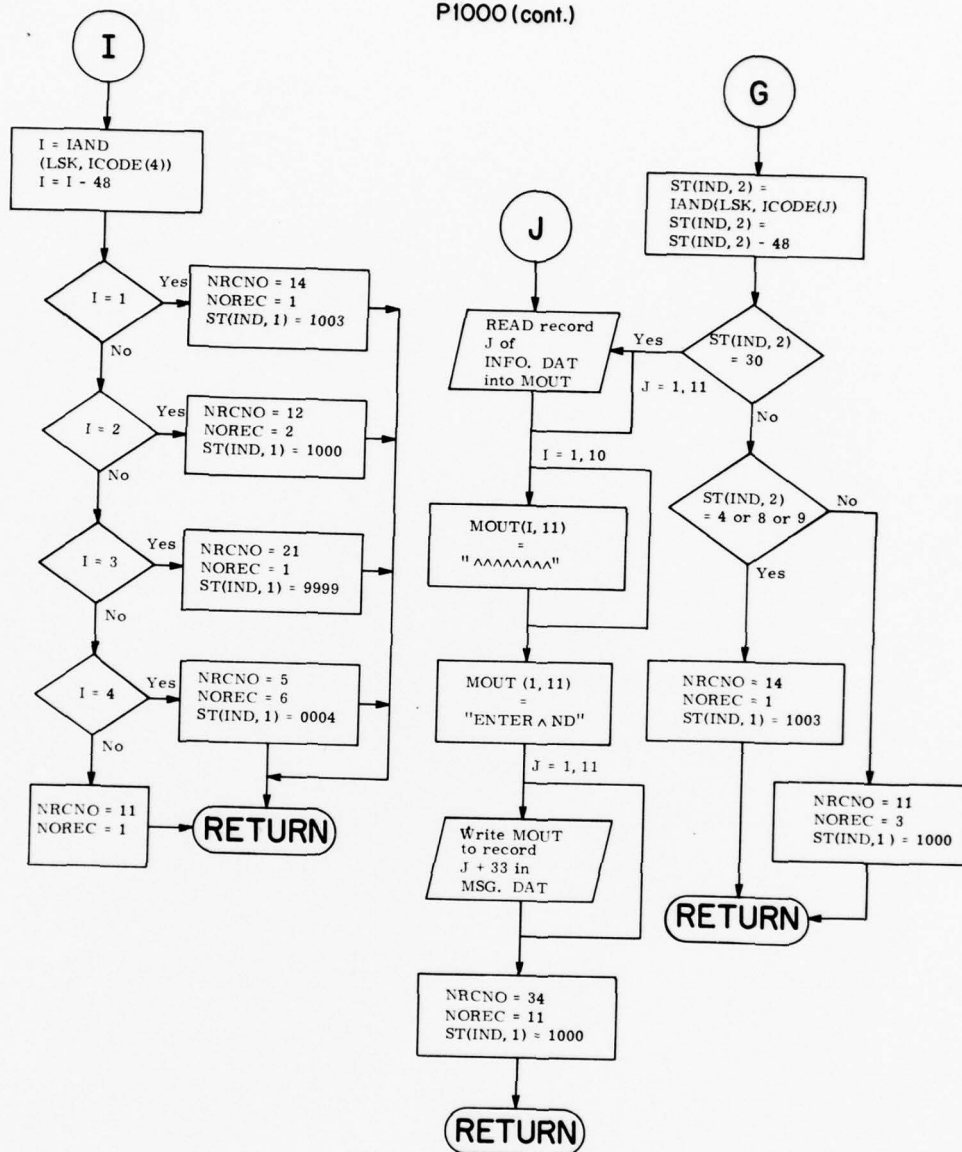


Figure 1-10. (Cont.)

FORTTRAN IV V01B-02
CORE=0BK, UIC=[20,20]

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P1000.OBJ=P1000.FOR/NOSN/LI:1

```

0001      C      SUBROUTINE P1000
0002      C
0003      C      CRT TO CRT MODE OF OPERATION
0004      REAL*8 MOUT,SK8,H8E,NDI,LID,TAB,NWD
0005      INTEGER ST
0006      COMMON      NDI,LID,TAB,NWD,ST(3,9),IND
0007      COMMON /U000/ MOUT(10,11),NRCNO,NOREC
0008      COMMON /LOOP/ ICODE(128),MSK,LSK
0009      COMMON /CPAC/ICON(128),ICFLG
0010      DATA IHC4,IHC8/'2404','2410/'
0011      REAL*8 H34,H38 ,H39
0012      REAL*8 LIDPAIR,M1,M2
0013      DATA H38,H34,SK8,H8E/'8      ','4      ','      ','ENTER ND'/
0014      DATA M1,M2/'MSG TO C','RT ND= '/
0015      DATA ISFC,LF,LHOME,LEOF/'20040','12','24','177777/
0016      DATA IHC9,H39/'2411','9      '/
0017      IF (ST(IND,1) .EQ.1000) GOTO 14
0018      IF (ST(IND,1) .EQ.1003) GOTO 53
0019      IF (ST(IND,1) .EQ.1004) GOTO 54
0020
0021      53 DO 500 J=5,20
0022          ICON(J)=LF
0023      500 IF (IND .EQ. 3) ICON(J)=0
0024          DO 510 J=4,108
0025              ICON(J+17)=ICODE(J)
0026              ILM=IAND(MSK,ICODE(J))
0027              ILL=IAND(LSK,ICODE(J))
0028              KK=J+17
0029              IF (ILM .EQ. MSK) GOTO 520
0030      510 IF (ILL .EQ. LSK) GOTO 530
0031      520 ICON(KK)=IAND(LSK,ICODE(KK-17))
0032          GOTO 540
0033      530 ICON(KK)=0
0034      540 DO 550 J=KK+1,125
0035      550 ICON(J)=0
0036          MOUT(1,1)=M1
0037          MOUT(2,1)=M2
0038          MOUT(3,1)=H38
0039          IF (ST(IND,2) .EQ. 4) MOUT(3,1)=H34
0040          IF (ST(IND,2) .EQ. 9) MOUT(3,1)=H39
0041          DO 20 I=4,10
0042      20 MOUT(I,1)=0
0043          DO 300 J=2,6
0044      300 READ(8'J+13')(MOUT(I,J),I=1,10)
0045          DO 400 J=1,6
0046      400 WRITE(8'J+33')(MOUT(I,J),I=1,10)
0047          NRCNO=34
0048          NOREC=6
0049          ICON(3)=IHC4
0050          IF (ST(IND,2) .EQ. 8) ICON(3)=IHC8
0051          IF (ST(IND,2) .EQ. 9) ICON(3)=IHC9
0052          ICON(1)=0
0053          ICON(2)=0
0054          ICON(4)=LHOME
0055          IF (IND .EQ. 3) ICON(4)=LF
0056          ICON(126)=LHOME

```


FORTRAN IV V01B-02
CORE=08K, UIC=L20,201TUE 01-MAR-77 15:52:27 PAGE 002
P1000.OBJ=P1000.FOR/NOSN/LI:1

```
0065      ICON(127)=LEOP
0066      ICFLG=1
0067      ST(IND,1)=1004
0068      RETURN
0069      54 I=IAND(LSK,ICODE(4))
0070      I=I-48
0071      IF (I .EQ. 1) GOTO 700
0073      IF (I .EQ. 2) GOTO 1
0075      IF (I .EQ. 3) GOTO 8
0077      IF (I .EQ. 4) GOTO 6
0079      19 NRCNO=11
0080      NOREC=1
0081      RETURN
0082      700 NRCNO=14
0083      NOREC=1
0084      ST(IND,1)=1003
0085      RETURN
0086      1 NRCNO=12
0087      NOREC=2
0088      ST(IND,1)=1000
0089      RETURN
0090      8 NRCNO=21
0091      NOREC=1
0092      ST(IND,1)=9999
0093      RETURN
0094      6 NRCNO=5
0095      NOREC=6
0096      ST(IND,1)=0004
0097      RETURN
C      NODE DESIG OF DEST CRT
0098      14 ST(IND,2)=IAND(LSK,ICODE(4))
0099      ST(IND,2)=ST(IND,2)-48
0100      IF (ST(IND,2) .EQ. 30) GOTO 30
C      ELSE DO
C      CK FOR INVALID NODE DESIGNATOR
0102      IF (ST(IND,2) .EQ. 4) GOTO 7
0104      IF (ST(IND,2) .EQ. 8) GOTO 7
0106      IF (ST(IND,2) .EQ. 9) GOTO 7
C      ELSE INVALID NODE DESIGNATOR
0108      17 NRCNO=11
0109      NOREC=3
0110      ST(IND,1)=1000
0111      RETURN
C      REQ ENTER MESS - MS121
0112      7 NRCNO=14
0113      NOREC=1
0114      ST(IND,1)=1003
0115      RETURN
0116      30 CONTINUE
0117      DO 100 J=1,11
0118      100 READ(7,J)(MOUT(I,J),I=1,10)
0119      DO 40 I=1,10
0120      40 MOUT(I,11)=SKB
0121      MOUT(1,11)=H8E
0122      DO 50 J=1,11
0123      50 WRITE(8,J+33)(MOUT(I,J),I=1,10)
```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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P1000.OBJ=P1000.FOR/NOSN/LI:1

0124 NRCND=34
0125 NOREC=11
0126 ST(IND,1)=1000
0127 RETURN
0128 END

FORTRAN IV DIAGNOSTICS

[WARNING] MSG #092 VARIABLE 'LIDPAI' NAME EXCEEDS 6 CHARACTERS
[WARNING] MSG #094 NON-STANDARD STATEMENT ORDERING

FOR -- [P1000] ERRORS: 0, WARNINGS: 2
>

FOR P5000.OBJ=P5000.FOR/NOSN/LI:1

FORTRAN IV V010-02
CORE=08K, UIC=[20,20]

FRI 18-MAR-77 19:01:35

PAGE 001

P10001.OBJ=P10001.FOR/NOSN/LI:1

```

0001 C      SUBROUTINE P1000
0002 C
0003 C      CRT TO CRT MODE OF OPERATION
0004 REAL*8 MOUT,SK8,HSE,NDI,LID,TAB,NWD
0005 INTEGER ST
0006 COMMON      NDI,LID,TAB,NWD,ST(3,9),IND
0007 COMMON /U000/ MOUT(10,11),NRCD,NOREC
0008 COMMON /LOOP/ ICODE(128),MSK,LSK
0009 COMMON /CPAC/ICON(128),ICFLG
0010 DATA IHC4,IHC8/"404","410"/
0011 REAL*8 H34,H38,H39
0012 REAL*8 LIDPAIR,M1,M2
0013 DATA H38,H34,SK8,HSE/"8","4","ENTER
0014 DATA M1,M2/"MSG TO C",RT,ND=/"
0015 DATA ISPC,LF,LHOME,LEOP/"20040","12","24","177777/
0016 DATA IHC9,H39/"411","9"/
0017 IF (ST(IND,1) .EQ. 1000) GOTO 14
0018 IF (ST(IND,1) .EQ. 1003) GOTO 53
0019 IF (ST(IND,1) .EQ. 1004) GOTO 54
0020 53 DO 500 J=5,20
0021     ICON(J)=LF
0022 500 IF (IND .EQ. 3) ICON(J)=0
0023     DO 510 J=4,108
0024         ICON(J+17)=ICODE(J)
0025         ILM=IAND(MSK,ICODE(J))
0026         ILL=IAND(LSK,ICODE(J))
0027         KK=J+17
0028         IF (ILM .EQ. MSK) GOTO 520
0029 510 IF (ILL .EQ. LSK) GOTO 520
0030 520 ICON(KK)=IAND(LSK,ICODE(KK-17))
0031     GOTO 540
0032 530 ICON(KK)=0
0033 540 DO 550 J=KK+1,125
0034     550 ICON(J)=0
0035     MOUT(1,1)=M1
0036     MOUT(2,1)=M2
0037     MOUT(3,1)=H38
0038     IF (ST(IND,2) .EQ. 4) MOUT(3,1)=H34
0039     IF (ST(IND,2) .EQ. 9) MOUT(3,1)=H39
0040     DO 20 I=4,10
0041 20 MOUT(I,1)=0
0042     DO 300 J=2,6
0043 300 READ(8,J+13)(MOUT(I,J),I=1,10)
0044     DO 400 J=1,6
0045 400 WRITE(8,J+23)(MOUT(I,J),I=1,10)
0046     NRCD=34
0047     NOREC=6
0048     ICON(3)=IHC4
0049     IF (ST(IND,2) .EQ. 8) ICON(3)=IHC8
0050     IF (ST(IND,2) .EQ. 9) ICON(3)=IHC9
0051     ICON(1)=0
0052     ICON(2)=0
0053     ICON(4)=LHOME
0054     IF (IND .EQ. 3) ICON(4)=LF
0055     ICON(126)=LHOME

```

FORTRAN IV V018-02
CORE=08K, UID=(20,20)

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PAGE 002

P10001 OBJ=P10001.FOR/N05N/LI:1

```

0065      ICON(127)=LEOP
0066      ICFLG=1
0067      ST(IND,1)=1004
0068      RETURN
0069      54 I=IAND(LSK,ICODE(4))
0070      I=I-48
0071      IF (I.EQ. 1) GOTO 700
0073      IF (I.EQ. 2) GOTO 1
0075      IF (I.EQ. 3) GOTO 8
0077      IF (I.EQ. 4) GOTO 6
0079      19 NRCNO=11
0080      NOREC=1
0081      RETURN
0082      700 NRCNO=14
0083      NOREC=1
0084      ST(IND,1)=1003
0085      RETURN
0086      1 NRCNO=12
0087      NOREC=2
0088      ST(IND,1)=1000
0089      RETURN
0090      8 NRCNO=21
0091      NOREC=1
0092      ST(IND,1)=9999
0093      RETURN
0094      6 NRCNO=5
0095      NOREC=6
0096      ST(IND,1)=0004
0097      RETURN
C      NODE DESIG OF DEST CRT
0098      14 ST(IND,2)=IAND(LSK,ICODE(4))
0099      ST(IND,2)=ST(IND,2)-48
0100      IF (ST(IND,2).EQ. 30) GOTO 30
C      ELSE DO
C      CK FOR INVALID NODE DESIGNATOR
0102      IF (ST(IND,2).EQ. 4) GOTO 7
0104      IF (ST(IND,2).EQ. 8) GOTO 7
0106      IF (ST(IND,2).EQ. 9) GOTO 7
C      ELSE INVALID NODE DESIGNATOR
0108      17 NRCNO=11
0109      NOREC=3
0110      ST(IND,1)=1000
0111      RETURN
C      REQ ENTER MESS - MS121
0112      7 NRCNO=14
0113      NOREC=1
0114      ST(IND,1)=1003
0115      RETURN
0116      30 CONTINUE
0117      DO 100 J=1,11
0118      100 READ(7,J)(MOUT(I,J), I=1,10)
0119      DO 40 I=1,10
0120      40 MOUT(I,11)=SK8
0121      MOUT(1,11)=HSE
0122      DO 50 J=1,11
0123      50 WRITE(8,J+22)(MOUT(I,J), I=1,10)

```

FORTRAN IV V01B-02
CORE=08K, UIC=(20,20)

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PAGE 002

P10001.OBJ=P10001.FOR/NOSEN/LI.1

0124 NRCNO=34
0125 NOREC=11
0126 ST(IND,1)=1000
0127 RETURN
0128 END

FORTRAN IV DIAGNOSTICS

[WARNING] MSG #092 VARIABLE "LIDPAI" NAME EXCEEDS 6 CHARACTERS
[WARNING] MSG #094 NON-STANDARD STATEMENT ORDERING

FOR -- [P1000] ERRORS: 0, WARNINGS: 2
>

P2000

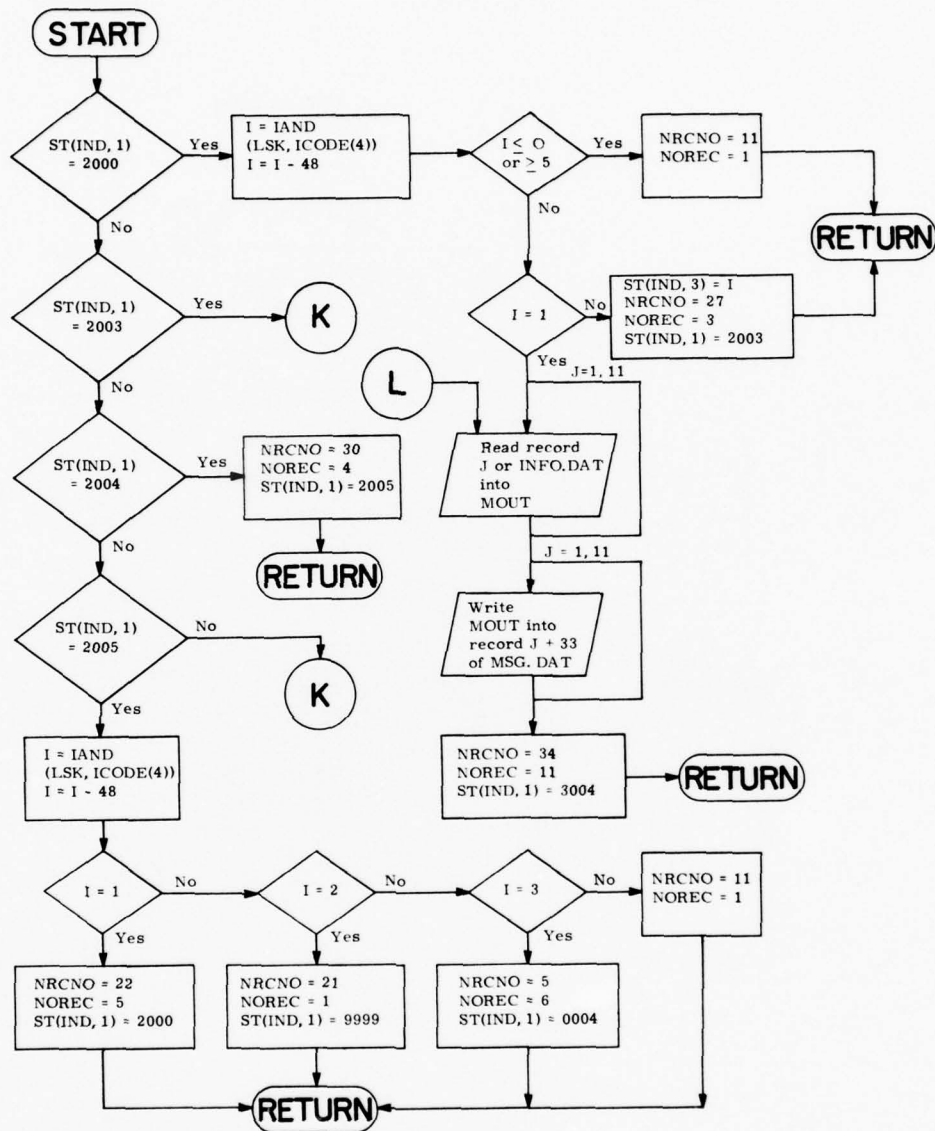


Figure 1-11. P2000

P2000 (cont.)

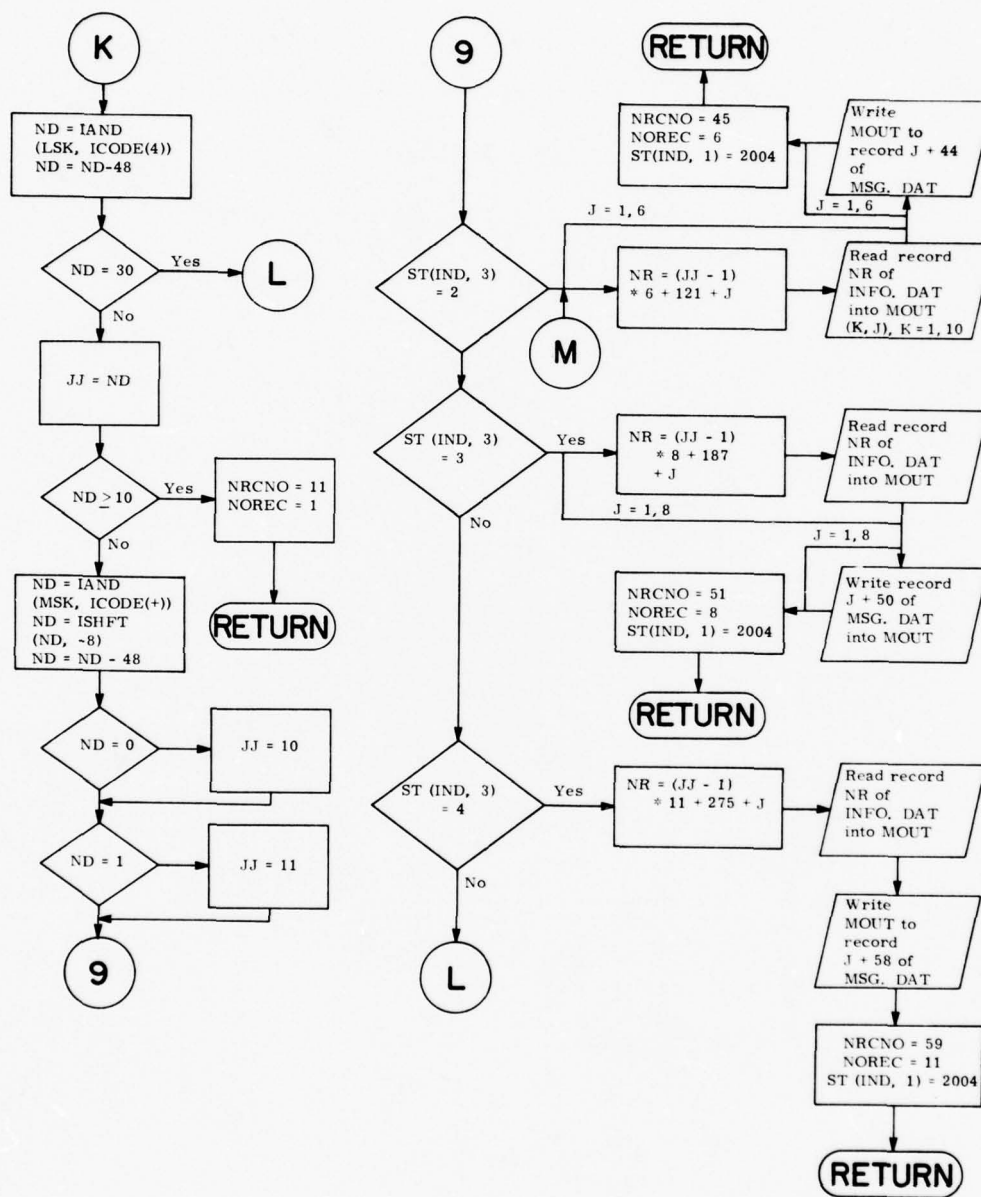


Figure 1-11. (Cont.)

FORTRAN IV V01B-02
CORE=08K, UIC=C20,20J

TUE 01-MAR-77 16:02:02

PAGE 001

P2000.OBJ=P2000.FOR/NOSN/LI:1

C SYSTEM INQUIRY MODE OF OPERATION
C

```
0001      SUBROUTINE P2000
0002      REAL*8      NDI,LID,TAB,NWD
0003      REAL*8 MOUT,CRTINMSG
0004      INTEGER ST
0005      COMMON      NDI,LID,TAB,NWD,ST(3,9),IND
0006      COMMON /DSK/I1,I2,I3,I4,I5,I6,I16
0007      COMMON /U000/ MOUT(10,11),NRCNO,NOREC
0008      COMMON /LOOP/ ICODE(128),MSK,LSK
0009      IF (ST(IND,1).EQ. 2000) GOTO 39
0011      IF (ST(IND,1).EQ. 2003) GOTO 53
0013      IF (ST(IND,1).EQ. 2004) GOTO 54
0015      IF (ST(IND,1).EQ. 2005) GOTO 55
0017      53 ND=IAND(LSK,ICODE(4))
0018      ND=ND-48
0019      IF (ND .EQ. 30) GOTO 72
0021      JJ=ND
0022      IF (ND .GE. 10) GOTO 20
0024      ND=IAND(MSK,ICODE(4))
0025      ND=ISHFT(ND,-8)
0026      ND=ND-48
0027      IF (ND .EQ. 0) JJ=10
0029      IF (ND .EQ. 1) JJ=11
0031      GOTO 22
0032      20 NRCNO=11
0033      NOREC=1
0034      RETURN
0035      22 CONTINUE
0036      GOTO (72,51,52,530) ST(IND,3)
0037      51 DO 110 J=1,6
0038      NR=(JJ-1)*6+121+J
0039      110 READ(7'NR)(MOUT(K,J),K=1,10)
0040      DO 44 J=1,6
0041      44 WRITE(8'J+44,ERR=20)(MOUT(K,J),K=1,10)
0042      NRCNO=45
0043      NOREC=6
0044      ST(IND,1)=2004
0045      RETURN
0046      52 DO 120 J=1,8
0047      NR=(JJ-1)*8+187+J
0048      120 READ(7'NR)(MOUT(K,J),K=1,10)
0049      DO 45 J=1,8
0050      45 WRITE(8'J+50,ERR=20)(MOUT(K,J),K=1,10)
0051      NRCNO=51
0052      NOREC=8
0053      ST(IND,1)=2004
0054      RETURN
0055      530 DO 130 J=1,11
0056      NR=(JJ-1)*11+275+J
0057      READ(7'NR)(MOUT(K,J),K=1,10)
0058      130 WRITE(8'J+58)(MOUT(K,J),K=1,10)
0059      NRCNO=59
0060      NOREC=11
0061      ST(IND,1)=2004
0062      RETURN
```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]TUE 01-MAR-77 16:02:02 PAGE 002
P2000.OBJ=P2000.FOR/NOSN/LI:1

```
0063      54 NRCNO=30
0064      NOREC=4
0065      ST(IND,1)=2005
0066      RETURN
0067      55 I=IAND(LSK,ICODE(4))
0068      I=I-48
0069      IF (I .EQ. 1) GOTO 2
0071      IF (I .EQ. 2) GOTO 8
0073      IF (I .EQ. 3) GOTO 6
0075      NRCNO=11
0076      NOREC=1
0077      RETURN
0078      2 NRCNO=22
0079      NOREC=5
0080      ST(IND,1)=2000
0081      RETURN
0082      8 NRCNO=21
0083      NOREC=1
0084      ST(IND,1)=9999
0085      RETURN
0086      6 NRCNO=5
0087      NOREC=6
0088      ST(IND,1)=0004
0089      RETURN
      C    GET INFOTYPE
0090      39 I=IAND(LSK,ICODE(4))
0091      I=I-48
0092      IF (I.LE.0) GOTO 71
0094      IF (I .GE. 5) GOTO 71
0096      IF (I.EQ. 1) GOTO 72
0098      ST(IND,3)=I
0099      25 NRCNO=27
0100      NOREC=3
0101      ST(IND,1)=2003
0102      RETURN
0103      72 DO 100 J=1,11
0104      100 READ(7,J)(MOUT(K,J),K=1,10)
0105      DO 43 J=1,11
0106      43 WRITE(8,J+33)(MOUT(K,J),K=1,10)
0107      NRCNO=34
0108      NOREC=11
0109      ST(IND,1)=2004
0110      RETURN
0111      71 NRCNO=11
0112      NOREC=1
0113      RETURN
0114      END
```

FORTRAN IV DIAGNOSTICS

[WARNING] MSG #092 VARIABLE 'CRTINM' NAME EXCEEDS 6 CHARACTERS

FOR -- [P2000] ERRORS: 0, WARNINGS: 1

P3000

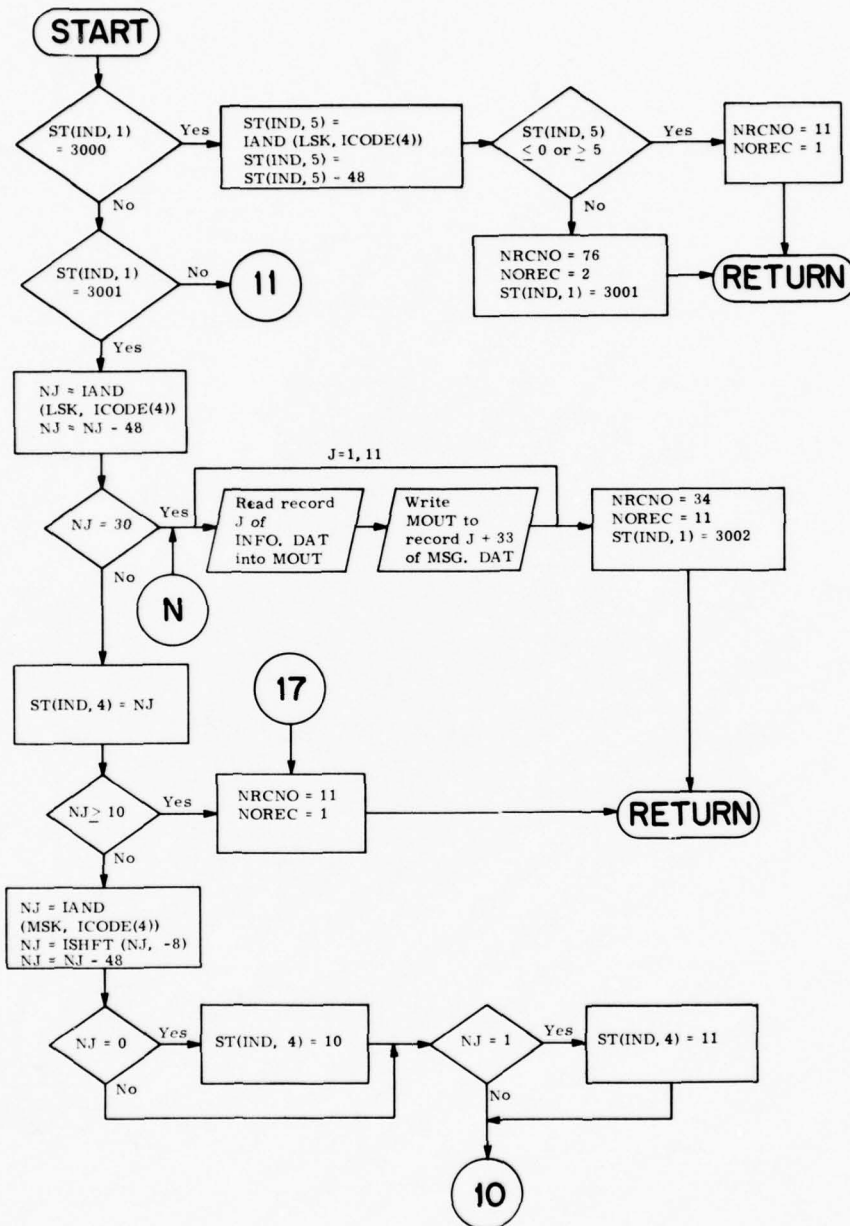


Figure 1-12. P3000

P3000(cont.)

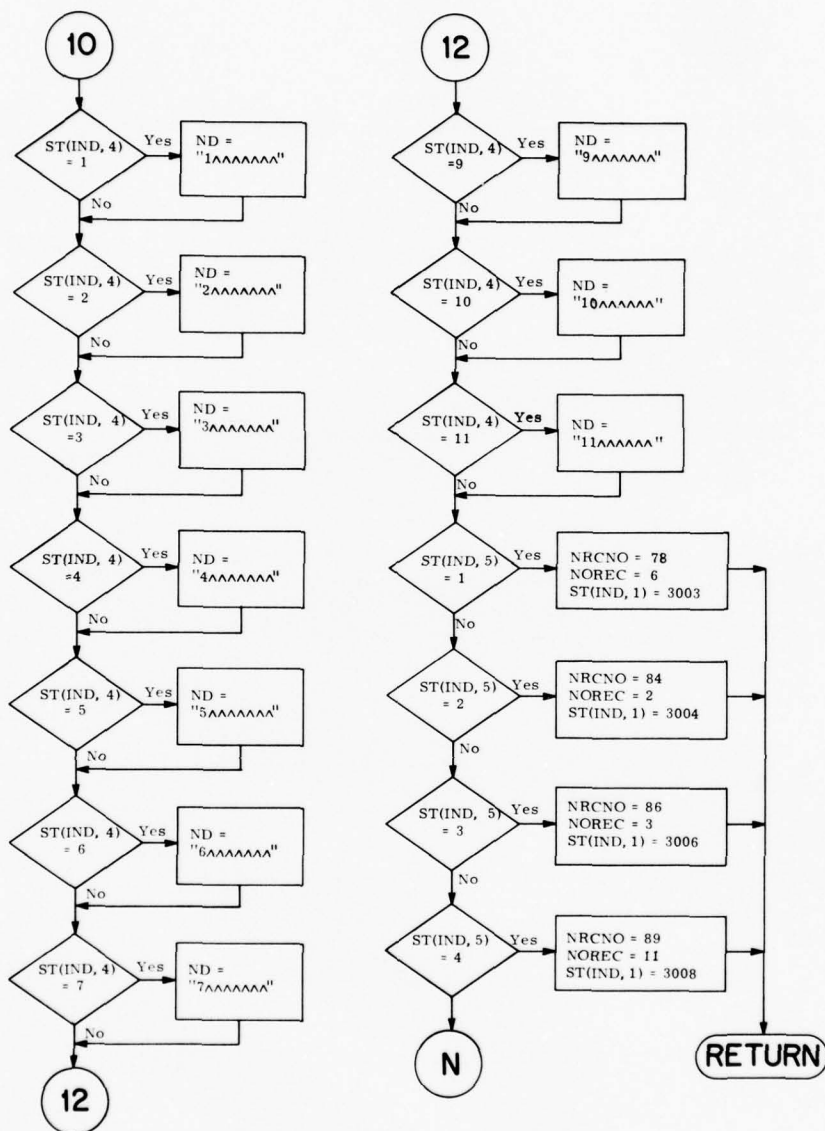


Figure 1-12. (Cont.)

P3000(cont.)

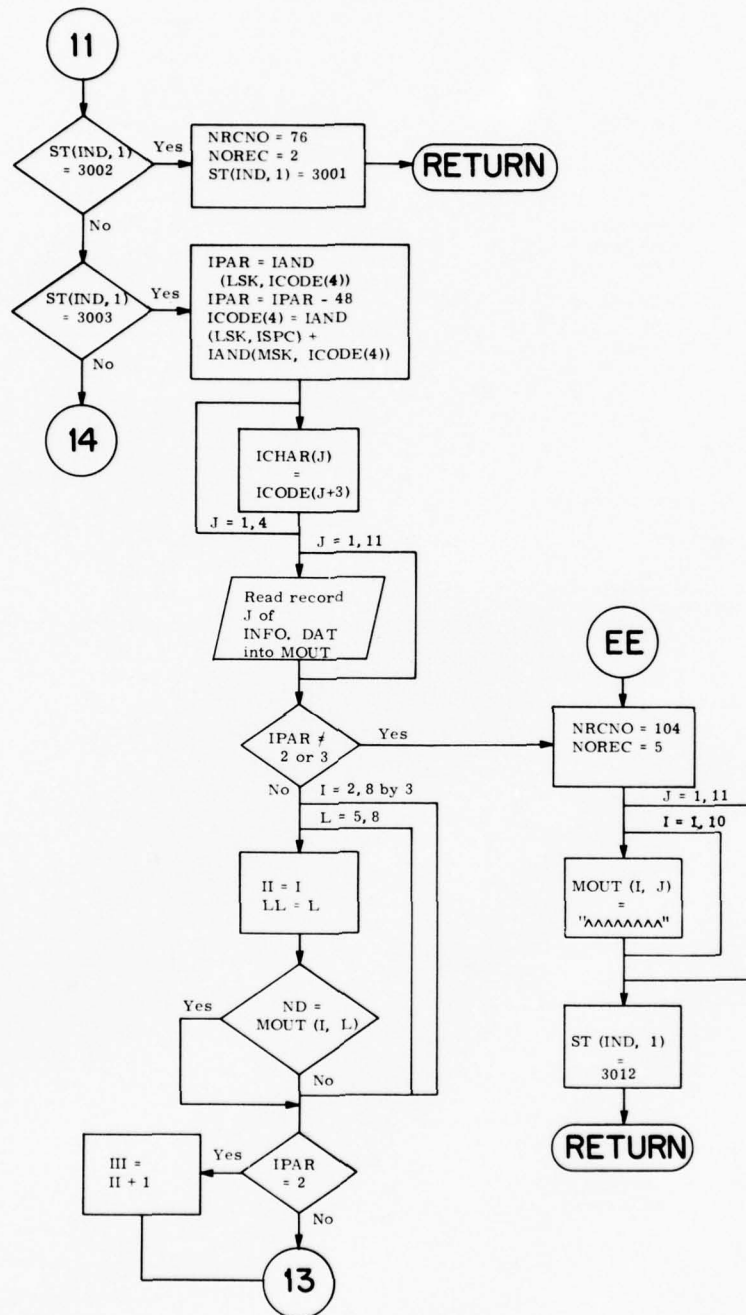


Figure 1-12. (Cont.)

P3000(cont.)

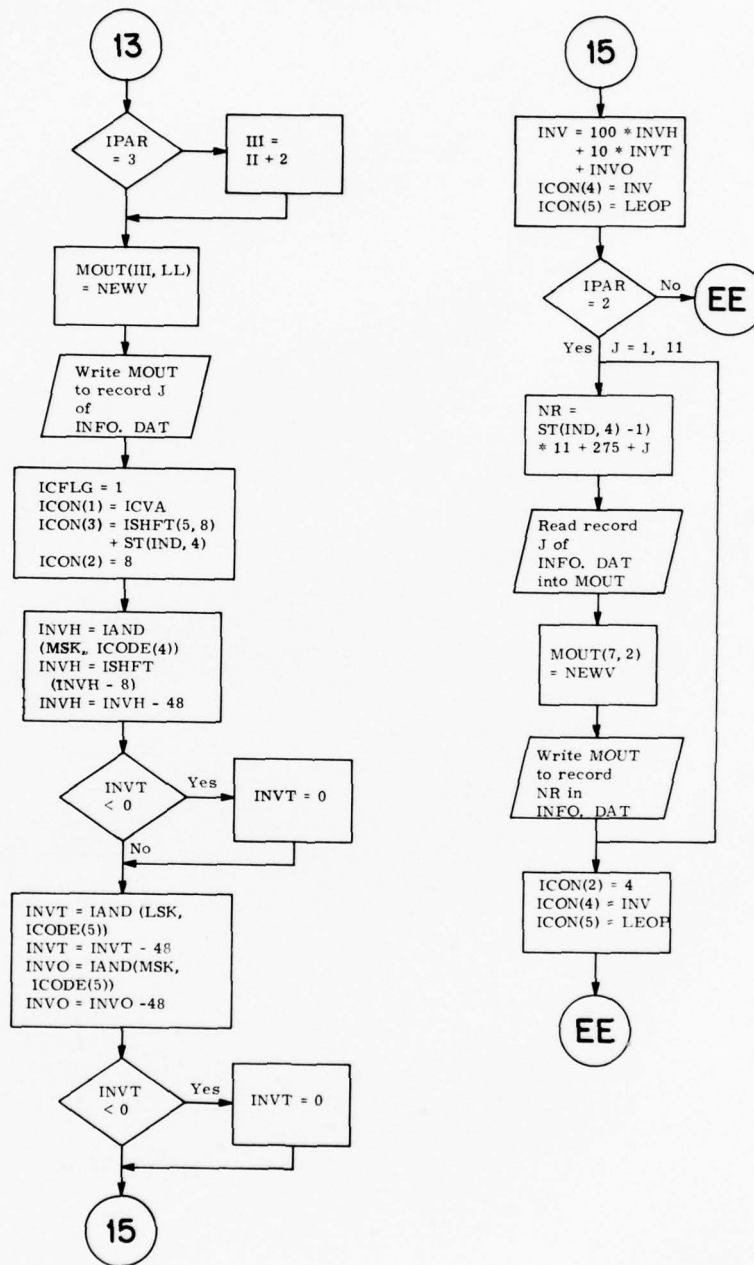


Figure 1-12. (Cont.)

P3000(cont.)

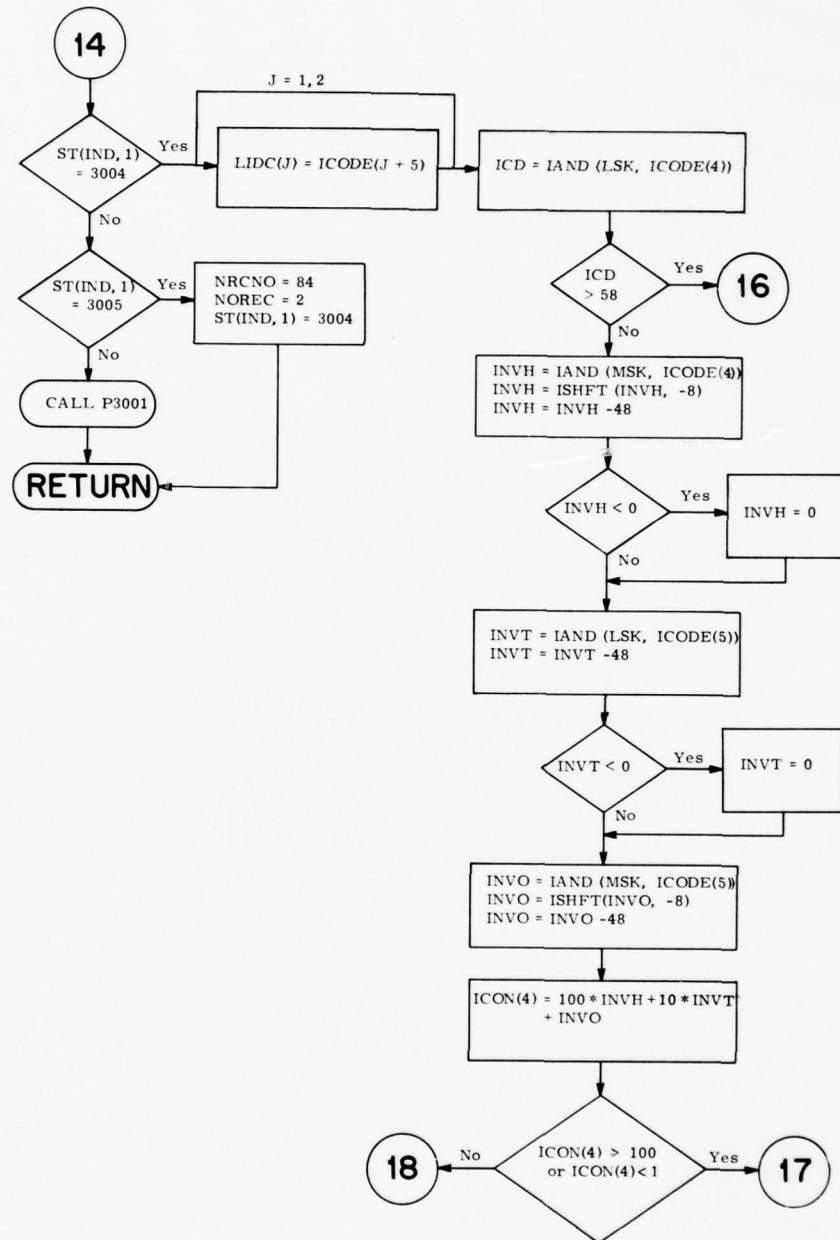


Figure 1-12. (Cont.)

3000(cont.)

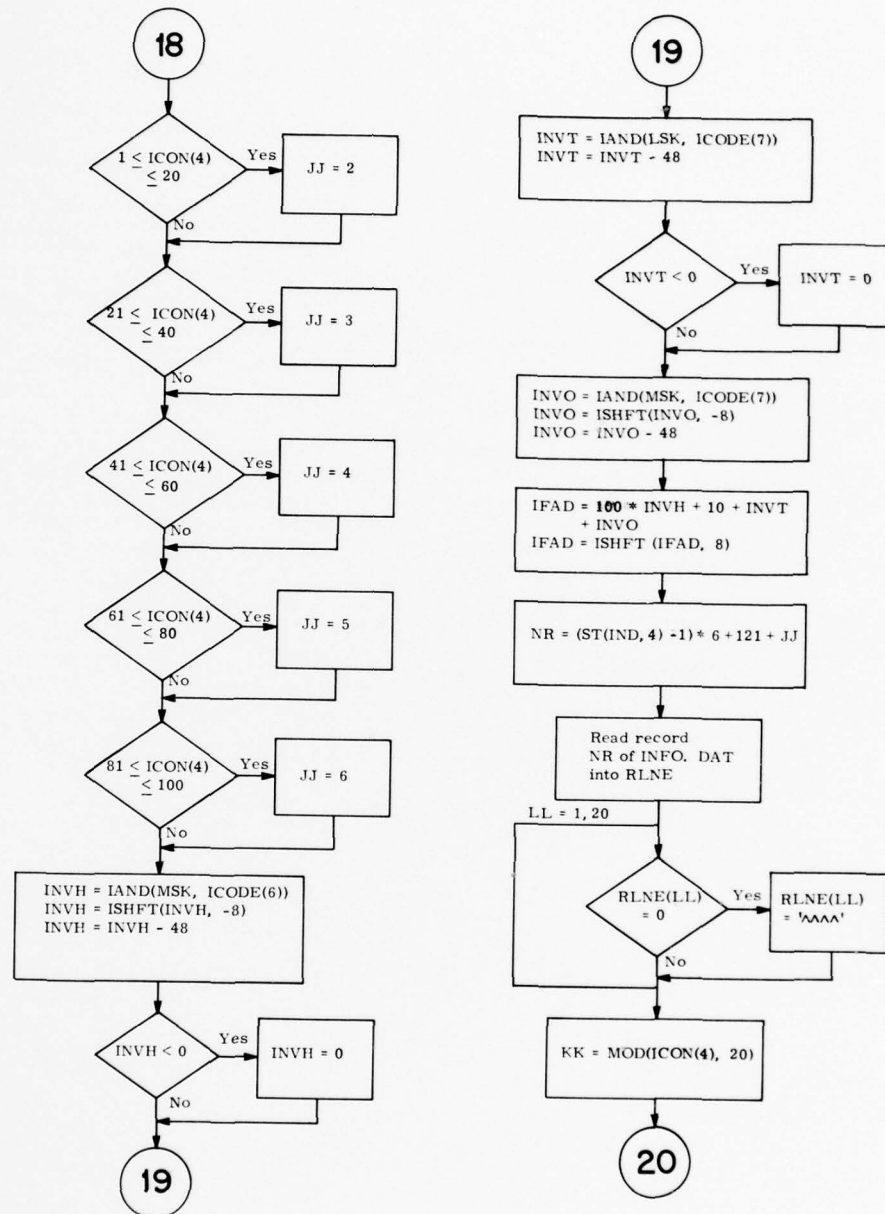


Figure 1-12. (Cont.)

P3000 (cont.)

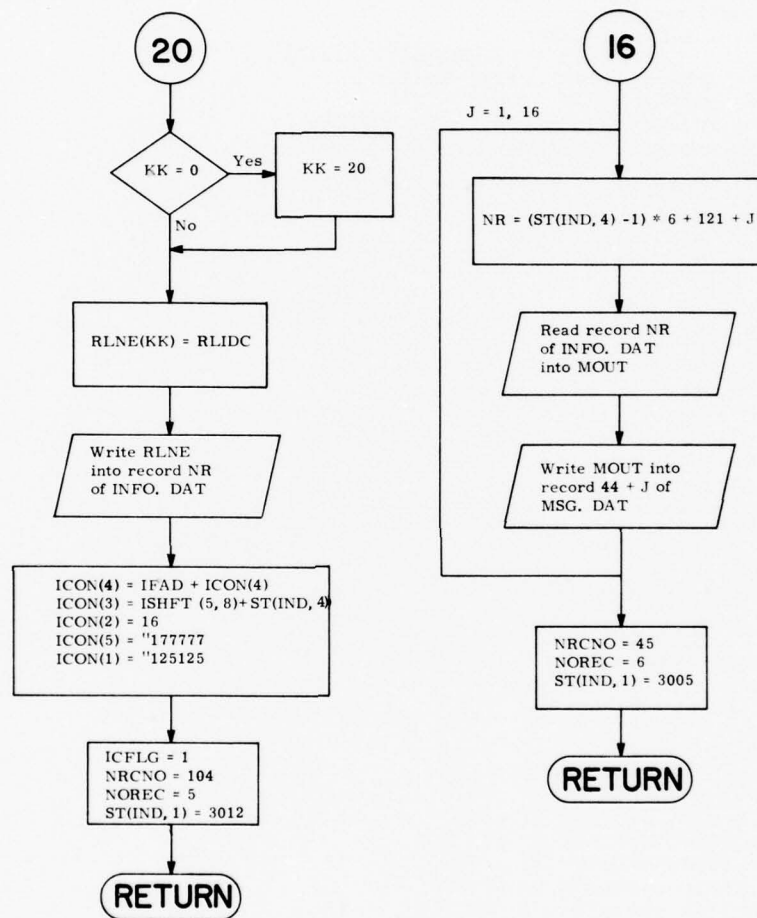


Figure 1-12. (Cont.)

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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PAGE 001

F3000.OBJ=F3000.FOR/NOSN/LI:1

```

      C      SYSTEM CONTROL MODE OF OPERATION
      C
0001      C      SUBROUTINE F3000
0002      REAL*8      NDI,LID,TAB,NWD
0003      INTEGER ST
0004      REAL*8 MOUT,ND,N1,N2,N3,N4,N5,N6,N7,N8,N9,N10,N11,
      1      NEWV,CND,SK8,Z
0005      REAL*4 RLIDC,RLNE,RSPC
0006      COMMON      NDI,LID,TAB,NWD,ST(3,9),IND
0007      COMMON /DSK/I1,I2,I3,I4,I5,I6,I16
0008      COMMON /S230/      ND
0009      COMMON /U000/ MOUT(10,11),NRCNO,NOREC
0010      COMMON /LOOP/ICODE(128),MSK,LSK
0011      COMMON /CPAC/ICON(128),ICFLG
0012      DIMENSION ICHAR(4),LIDC(2),RLNE(20)
0013      EQUIVALENCE (ICAR,NEWV)
0014      EQUIVALENCE (LIDC,RLIDC)
0015      DATA N1,N2,N3,N4,N5,N6,N7,N8,N9,N10,N11,CND,SK8,Z/
      1 '1      ','2      ','3      ','4      ','
      2 '5      ','6      ','7      ','8      ','9      ','
      3 '10     ','11     ','8HCAN'T DO','0      '//'
0016      DATA ISPC/'120240/
0017      DATA ICVA,LEOP/'125125','177777/
0018      DATA RSPC /'/'
0019 20      IF (ST(IND,1) .EQ. 3000) GOTO 3
0021      IF (ST(IND,1) .EQ. 3001) GOTO 21
0023      IF (ST(IND,1) .EQ. 3002) GOTO 22
0025      IF (ST(IND,1) .EQ. 3003) GOTO 23
0027      IF (ST(IND,1) .EQ. 3004) GOTO 24
0029      IF (ST(IND,1) .EQ. 3005) GOTO 25
0031      CALL P3001
0032      RETURN
0033 21      NJ=IAND(LSK,ICODE(4))
0034      NJ=NJ-48
0035      IF (NJ .EQ. 30) GOTO 102
0037      ST(IND,4)=NJ
0038      IF (NJ .GE. 10) GOTO 120
0040      NJ=IAND(MSK,ICODE(4))
0041      NJ=ISHFT(NJ,-8)
0042      NJ=NJ-48
0043      IF (NJ .EQ. 0) ST(IND,4)=10
0045      IF (NJ .EQ. 1) ST(IND,4)=11
0047      IF (ST(IND,4) .EQ. 1) ND=N1
0049      IF (ST(IND,4) .EQ. 2) ND=N2
0051      IF (ST(IND,4) .EQ. 3) ND=N3
0053      IF (ST(IND,4) .EQ. 4) ND=N4
0055      IF (ST(IND,4) .EQ. 5) ND=N5
0057      IF (ST(IND,4) .EQ. 6) ND=N6
0059      IF (ST(IND,4) .EQ. 7) ND=N7
0061      IF (ST(IND,4) .EQ. 8) ND=N8
0063      IF (ST(IND,4) .EQ. 9) ND=N9
0065      IF (ST(IND,4) .EQ. 10) ND=N10
0067      IF (ST(IND,4) .EQ. 11) ND=N11
0069      GO TO 122
0070 120      NRCNO=11

```

FORTTRAN IV V01B-02
CORE=08K, UIC=C20,20J

FRI 18-MAR-77 19:04:40
F3000.OBJ=F3000.FOR/NQSN/LI:1

PAGE 002
F3000.OBJ=F3000.FOR/NQSN/LI:1

```

0071      NOREC=1
0072      RETURN
0073      122 IF (ST(IND,5) .EQ. 1) GO TO 161
0075          IF (ST(IND,5) .EQ. 2) GO TO 165
0077          IF (ST(IND,5) .EQ. 3) GO TO 166
0079          IF (ST(IND,5) .EQ. 4) GO TO 167
0081      102 DO 110 J=1,11
0082          READ(7,J)(MOUT(I,J),I=1,10)
0083      110 WRITE(8,J+33)(MOUT(I,J),I=1,10)
0084          NRCNO=34
0085          NOREC=11
0086          ST(IND,1)=3002
0087          RETURN
0088      161 NRCNO=78
0089          NOREC=6
0090          ST(IND,1)=3003
0091          RETURN
0092      165 NRCNO=84
0093          NOREC=2
0094          ST(IND,1)=3004
0095          RETURN
0096      166 NRCNO=86
0097          NOREC=3
0098          ST(IND,1)=3006
0099          RETURN
0100      167 NRCNO=89
0101          NOREC=11
0102          ST(IND,1)=3008
0103          RETURN
C          NDI RESPONSE
C          WAS SUBROUTINE 3002
0104      22 NRCNO=76
0105          NOREC=2
0106          ST(IND,1)=3001
0107          RETURN
C          NET DEVICE PARAMETERS
C          WAS SUBROUTINE 3003
0108      23 IPAR=IAND(LSK,ICODE(4))
0109          IPAR=IPAR-48
0110          ICODE(4)=IAND(LSK,ISPC)+IAND(MSK,ICODE(4))
0111          DO 600 J=1,4
0112      600 ICHAR(J)=ICODE(J+3)
0113          DO 200 J=1,11
0114      200 READ(7,J)(MOUT(I,J),I=1,10)
0115          IF (IPAR .EQ. 1) GO TO 250
0117          IF (IPAR .EQ. 2) GO TO 230
0119          IF (IPAR .EQ. 3) GO TO 230
0121          GO TO 250
0122      230 DO 260 I=2,8,3
0123          DO 260 L=5,8
0124          II=I
0125          LL=L
0126          IF (ND .EQ. MOUT(I,L)) GO TO 240
0128      260 CONTINUE
0129      240 IF (IPAR .EQ. 2) III=II+1
0131          IF (IPAR .EQ. 3) III=II+2

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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P3000.OBJ=P3000.FOR/NOSN/LI:1

```
0133      MOUT(III,LL)=NEWV
0134      DO 241 J=1,11
0135 241    WRITE(7,J)(MOUT(I,J),I=1,10)
0136      ICFLG=1
0137      ICON(1)=ICVA
0138      ICON(3)=ISHFT(5,8)+ST(IND,4)
0139      ICON(2)=8
0140      INVH=IAND(MSK,ICODE(4))
0141      INVH=ISHFT(INVH,-8)
0142      INVH=INVH-48
0143      IF (INVH .LT. 0) INVH=0
0144      INVT=IAND(LSK,ICODE(5))
0145      INVT=INVT-48
0146      IF (INVT .LT. 0) INVT=0
0147      INVO=IAND(MSK,ICODE(5))
0148      INVO=ISHFT(INVO,-8)
0149      INVO=INVO-48
0150      INV=100*INVH+10*INVT+INVO
0151      ICON(4)=INV
0152      ICON(5)=LEOF
0153      IF (IPAR .EQ. 2) GOTO 247
0154      GO TO 250
0155 247    DO 248 J=1,11
0156      NR=(ST(IND,4)-1)*11+275+J
0157      READ(7,NR)(MOUT(I,J),I=1,10)
0158      MOUT(7,2)=NEWV
0159 248    WRITE(7,NR)(MOUT(I,J),I=1,10)
0160      ICON(2)=4
0161      ICON(4)=INV
0162      ICON(5)=LEOF
0163 250    NRCNO=104
0164      NOREC=5
0165      DO 280 J=1,11
0166      DO 280 I=1,10
0167 280    MOUT(I,J)=SK8
0168      ST(IND,1)=3012
0169      RETURN
0170      LIDS
0171  C
0172 24    DO 700 J=1,2
0173 700    LIDC(J)=ICODE(J+5)
0174      ILD=IAND(LSK,ICODE(4))
0175      IF (ILD .GT. 58) GOTO 361
0176      INVH=IAND(MSK,ICODE(4))
0177      INVH=ISHFT(INVH,-8)
0178      INVH=INVH-48
0179      IF (INVH .LT. 0) INVH=0
0180      INVT=IAND(LSK,ICODE(5))
0181      INVT=INVT-48
0182      IF (INVT .LT. 0) INVT=0
0183      INVO=IAND(MSK,ICODE(5))
0184      INVO=ISHFT(INVO,-8)
0185      INVO=INVO-48
0186      ICON(4)=100*INVH+10*INVT+INVO
0187      IF (ICON(4) .GT. 100) GOTO 120
0188      IF (ICON(4) .LT. 1) GOTO 120
0189      JJ=2
0190
```

FORTTRAN IV V01R-02
CORE=08K, UIC=[20,20]

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P3000.OBJ=P3000.FOR/NOSN/LI:1

```

0196      IF (ICON(4) .GE. 21) JJ=3
0198      IF (ICON(4) .GE. 41) JJ=4
0200      IF (ICON(4) .GE. 61) JJ=5
0202      IF (ICON(4) .GE. 81) JJ=6
0204      INVH=IAND(MSK,ICODE(6))
0205      INVH=ISHFT(INVH,-8)
0206      INVH=INVH-48
0207      IF (INVH .LT. 0) INVH=0
0209      INVT=IAND(LSK,ICODE(7))
0210      INVT=INVT-48
0211      IF (INVT .LT. 0) INVT=0
0213      INVO=IAND(MSK,ICODE(7))
0214      INVO=ISHFT(INVO,-8)
0215      INVO=INVO-48
0216      IFAD=100*INVH+10*INVT+INVO
0217      IFAD=ISHFT(IFAD,8)
0218      NR=(ST(IND,4)-1)*6+121+JJ
0219      READ (7'NR,ERR=120)(RLNE(I),I=1,20)
0220      DO 330 LL=1,20
0221 330 IF (RLNE(LL) .EQ. 0) RLNE(LL)=RSPC
0223      KK=MOD(ICON(4),20)
0224      IF (KK .EQ. 0) KK=20
0226      RLNE(KK)=RLIDC
0227      WRITE(7'NR,ERR=120)(RLNE(I),I=1,20)
0228 320 ICON(4)=IFAD+ICON(4)
0229      ICON(3)=ISHFT(5,8)+ST(IND,4)
0230      ICON(2)=16
0231      ICON(5)=LEOP
0232      ICON(1)=ICVA
0233      ICFLG=1
0234      NRCNO=104
0235      NOREC=5
0236      ST(IND,1)=3012
0237      RETURN
0238 361 DO 362 J=1,6
0239      NR=(ST(IND,4)-1)*6+121+J
0240      READ(7'NR,ERR=120)(MOUT(I,J),I=1,10)
0241 362 WRITE(8'44+J)(MOUT(I,J),I=1,10)
0242      NRCNO=45
0243      NOREC=6
0244      ST(IND,1)=3005
0245      RETURN
C      LID RESPONSE
C      WAS SUBROUTINE 3005
0246 25 NRCNO=84
0247      NOREC=2
0248      ST(IND,1)=3004
0249      RETURN
0250 3 ST(IND,5)=IAND(LSK,ICODE(4))
0251      ST(IND,5)=ST(IND,5)-48
0252      IF (ST(IND,5) .LE. 0) GO TO 120
0254      IF (ST(IND,5) .GE. 5) GO TO 120
0256      ST(IND,1)=3001
0257      NRCNO=76
0258      NOREC=2
0259      RETURN

```


Burroughs Corporation

FORTAN IV V01B-02
CORE=0BK, UIC=[20,20]

FRI 18-MAR-77 19:04:40 PAGE 005
P3000.OBJ=P3000.FOR/NOSN/LI:1

0260 END

>

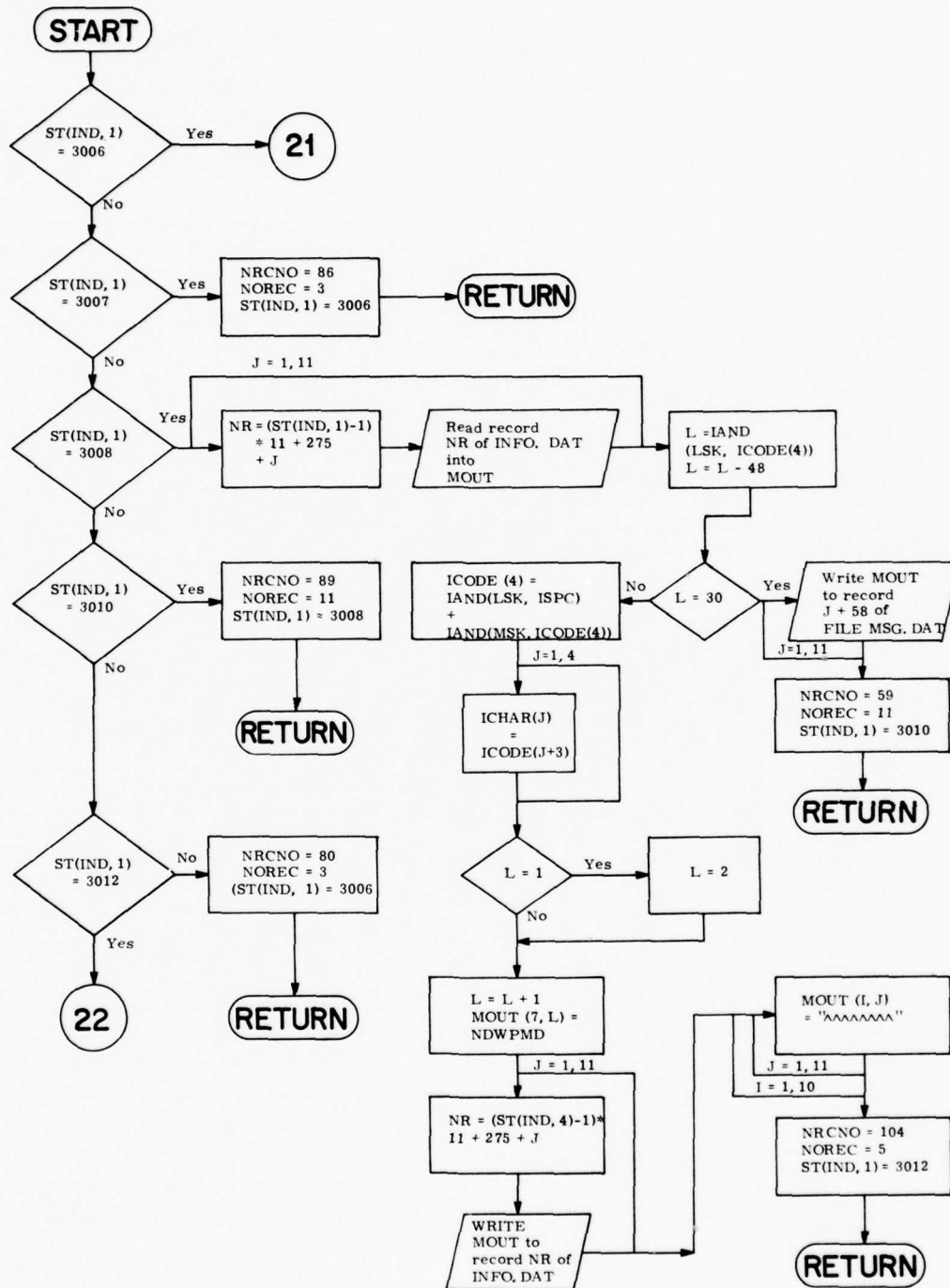


Figure 1-13. P3001

P300I (cont.)

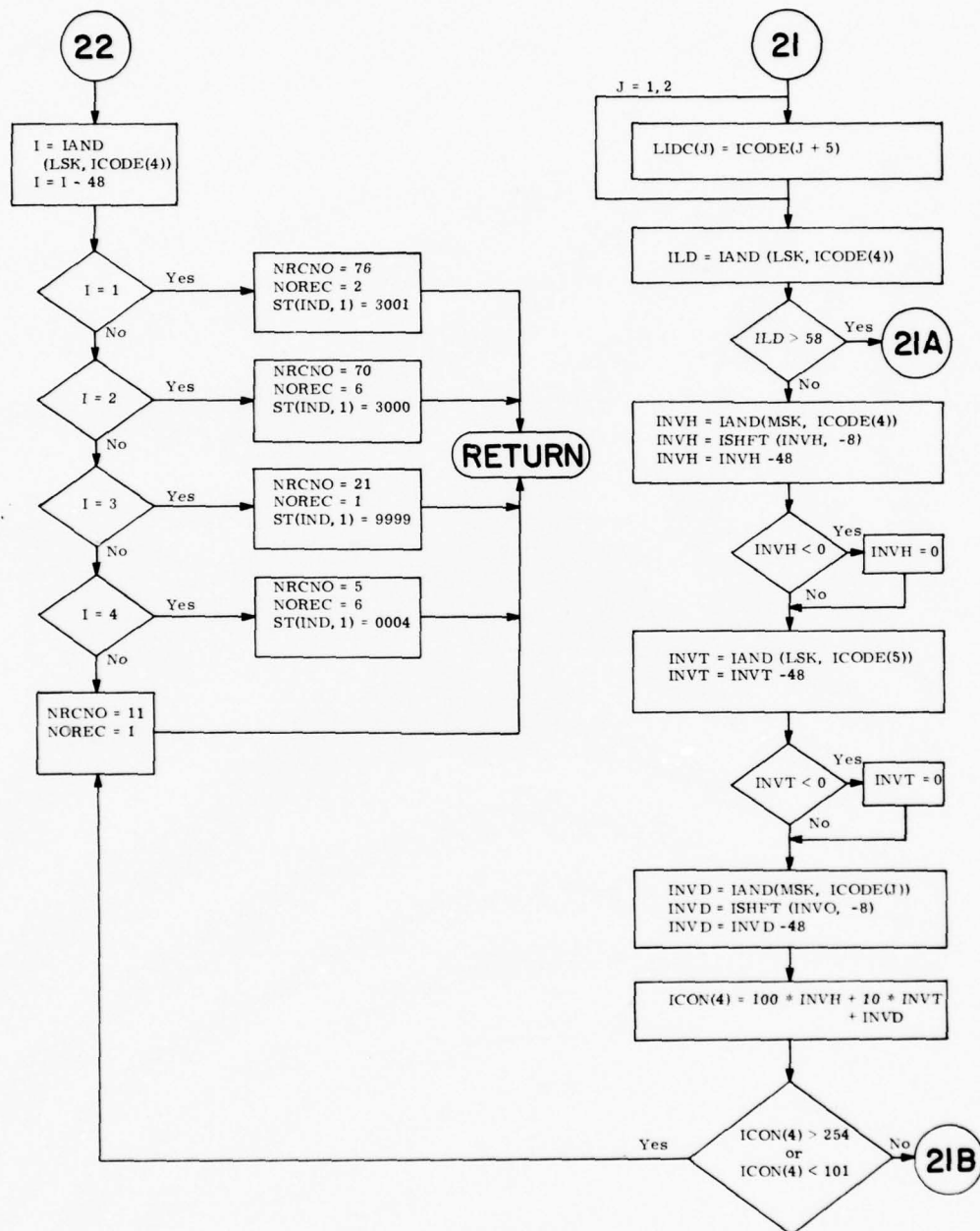


Figure 1-13. (Cont.)

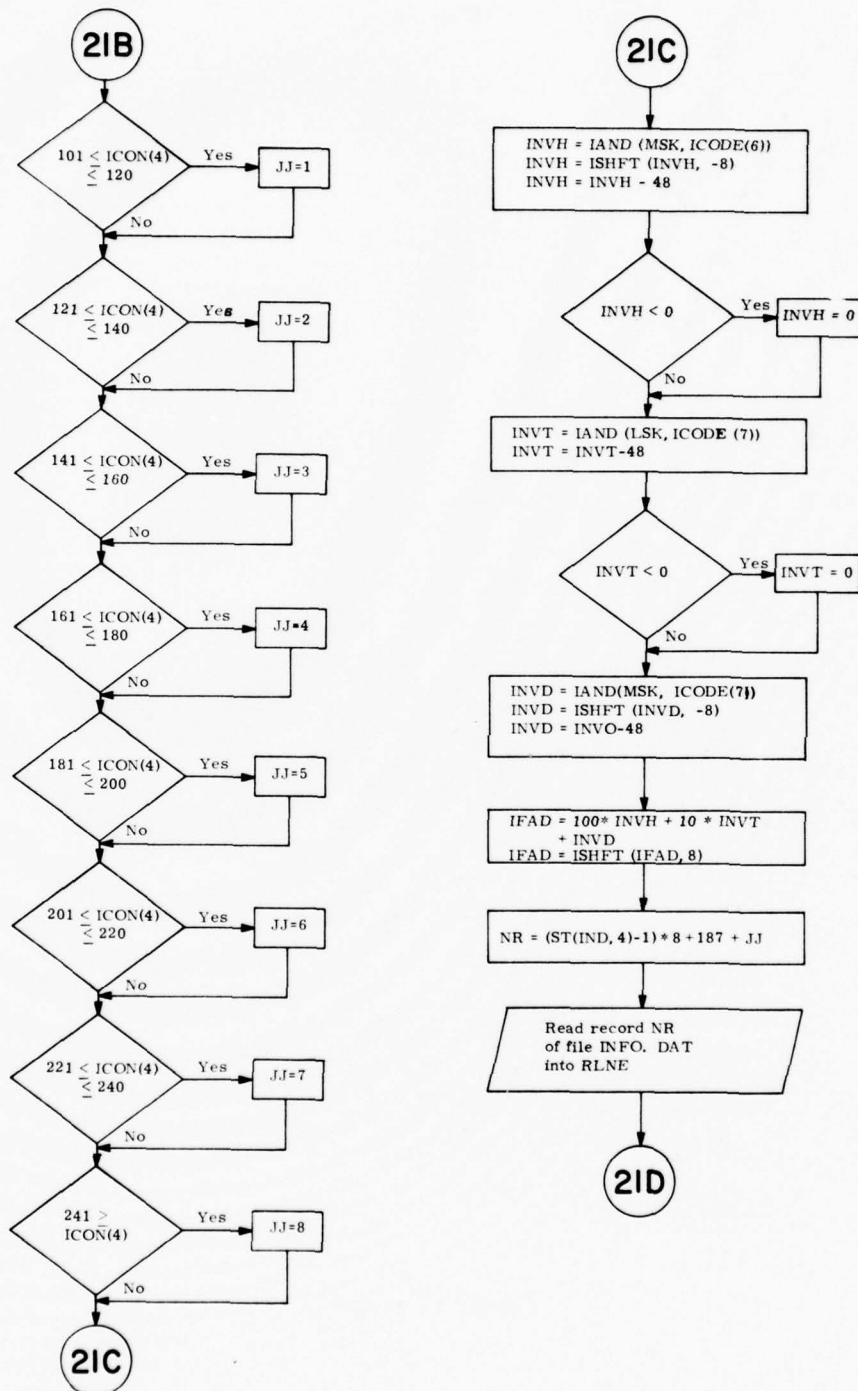


Figure 1-13. (Cont.)

Burroughs Corporation

P300I (cont.)

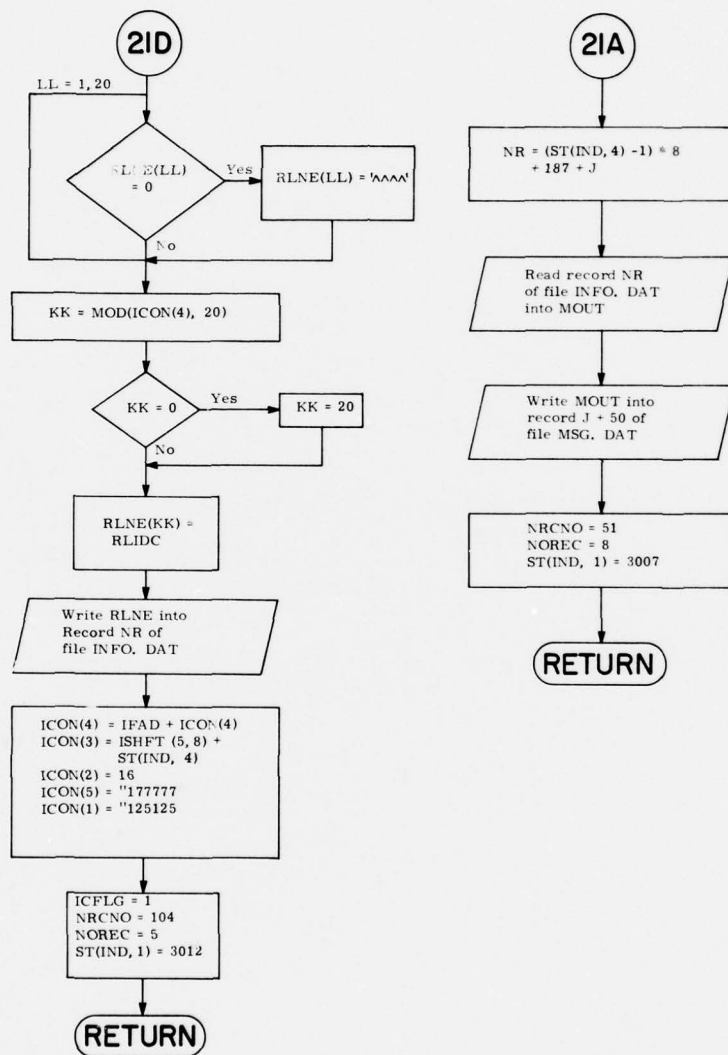


Figure 1-13. (Cont.)

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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P3001.OBJ=P3001.FOR/NOSN/LI:1

```

0001      SUBROUTINE P3001
0002      REAL*8 NDWPM, NWD, MOUT, NIM, NDI, LID, TAB, ND, SK8
0003      REAL*4 RLIDC, RLNE, RSFC
0004      INTEGER ST
0005      C      SUBS 3007 THRU 3012
0006      COMMON NDI, LID, TAB, NWD, ST(3,9), IND
0007      COMMON /DSK/ I1, I2, I3, I4, I5, I6, I16
0008      COMMON /S230/ ND
0009      COMMON /S301/ ITYP
0010      COMMON /U000/ MOUT(10,11), NRCNO, NOREC
0011      COMMON /LOOF/ ICODE(128), MSK, LSK
0012      COMMON /CPAC/ ICON(128), ICFLG
0013      DIMENSION ICHAR(4), LIDC(2), RLNE(20)
0014      EQUIVALENCE (ICAR, NDWPM)
0015      EQUIVALENCE (LIDC, RLIDC)
0016      DATA SK8/' '
0017      DATA NIM/'NOT IMPL'/
0018      DATA ISFC/'120240'/
0019      DATA ICVA, LEOP/'125125','177777'/
0020      DATA RSFC/' '
0021      C      PICK UP WHERE P3000 LEFT OFF
0022      IF (ST(IND,1) .EQ. 3006) GOTO 26
0023      IF (ST(IND,1) .EQ. 3007) GO TO 27
0024      IF (ST(IND,1) .EQ. 3008) GO TO 28
0025      IF (ST(IND,1) .EQ. 3010) GO TO 30
0026      IF (ST(IND,1) .EQ. 3012) GO TO 32
0027      TAB RESPONSE - WAS SUBROUTINE 3007
0028      C
0029      41 FORMAT(A8)
0030      27 NRCNO=86
0031      NOREC=3
0032      ST(IND,1)=3006
0033      RETURN
0034      C      WORKPAGE PARAMETERS - WAS 3008
0035      28 DO 100 J=1,11
0036      NR=(ST(IND,4)-1)*11+275+J
0037      100 READ(7,NR)(MOUT(I,J), I=1,10)
0038      L=IAND(LSK, ICODE(4))
0039      L=L-48
0040      IF (L .EQ. 30) GOTO 75
0041      ICODE(4)=IAND(LSK, ISFC)+IAND(MSK, ICODE(4))
0042      DO 200 J=1,4
0043      ICHAR(J)=ICODE(J+3)
0044      IF (L .EQ. 1) L=2
0045      L=L+1
0046      MOUT(7,L)=NDWPM
0047      DO 110 J=1,11
0048      NR=(ST(IND,4)-1)*11+275+J
0049      110 WRITE(7,NR)(MOUT(I,J), I=1,10)
0050      DO 120 J=1,11
0051      DO 120 I=1,10
0052      MOUT(I,J)=SK8
0053      NRCNO=104
0054      NOREC=5
0055      ST(IND,1)=3012
0056      RETURN
0057      75 DO 76 J=1,11
0058
0059

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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PAGE 002

P3001.OBJ=P3001.FOR/NOSN/LI:1

```
0060      76 WRITE(8,J+58,ERR=999)(MOUT(I,J),I=1,10)
0061      NRCNO=59
0062      NOREC=11
0063      ST(IND,1)=3010
0064      RETURN
C
0065      30 NRCNO=89
0066      NOREC=11
0067      ST(IND,1)=3008
0068      RETURN
C
0069      32 I=IAND(LSK,ICODE(4))
0070      I=I-48
0071      IF (I .EQ. 1) GO TO 149
0073      IF (I .EQ. 2) GO TO 103
0075      IF (I .EQ. 3) GO TO 108
0077      IF (I .EQ. 4) GO TO 106
0079      999 NRCNO=11
0080      NOREC=1
0081      RETURN
0082      149 NRCNO=76
0083      NOREC = 2
0084      ST(IND,1)=3001
0085      RETURN
0086      103 NRCNO=70
0087      NOREC=6
0088      ST(IND,1)=3000
0089      RETURN
0090      108 NRCNO=21
0091      NOREC=1
0092      ST(IND,1)=9999
0093      RETURN
0094      106 NRCNO=5
0095      NOREC=6
0096      ST(IND,1)=0004
0097      RETURN
C
0098      26 DO 810 J=1,2
0099      810 LIDC(J)=ICODE(J+5)
0100      ILD=IAND(LSK,ICODE(4))
0101      IF (ILD .GT. 58) GOTO 472
0103      INVH=IAND(MSK,ICODE(4))
0104      INVH=ISHFT(INVH,-8)
0105      INVH=INVH-48
0106      IF (INVH .LT. 0) INVH=0
0108      INVT=IAND(LSK,ICODE(5))
0109      INVT=INVT-48
0110      IF (INVT .LT. 0) INVT=0
0112      INVO=IAND(MSK,ICODE(5))
0113      INVO=ISHFT(INVO,-8)
0114      INVO=INVO-48
0115      ICON(4)=100*INVH+10*INVT+INVO
0116      IF (ICON(4) .GT. 254) GOTO 999
0118      IF (ICON(4) .LT. 101) GOTO 999
0120      JJ=1
0121      IF (ICON(4) .GE. 121) JJ=2
```

FORTTRAN IV V01B-02 FRI 18-MAR-77 19:10:34 PAGE 003
CORE=08K, UIC=[20,20] P3001.0BJ=P3001.FOR/NOSN/LI:1

```
0123      IF (ICON(4) .GE. 141) JJ=3
0125      IF (ICON(4) .GE. 161) JJ=4
0127      IF (ICON(4) .GE. 181) JJ=5
0129      IF (ICON(4) .GE. 201) JJ=6
0131      IF (ICON(4) .GE. 221) JJ=7
0133      IF (ICON(4) .GE. 241) JJ=8
0135      INVH=IAND(MSK,ICDDE(6))
0136      INVH=ISHFT(INVH,-8)
0137      INVH=INVH-48
0138      IF (INVH .LT. 0) INVH=0
0140      INVT=IAND(LSK,ICDDE(7))
0141      INVT=INVT-48
0142      IF (INVT .LT. 0) INVT=0
0144      INVO=IAND(MSK,ICDDE(7))
0145      INVO=ISHFT(INVO,-8)
0146      INVO=INVO-48
0147      IFAD=100*INVH+10*INVT+INVO
0148      IFAD=ISHFT(IFAD,8)
0149      NR=(ST(IND,4)-1)*8+187+JJ
0150      READ(7'NR,ERR=999)(RLNE(I),I=1,20)
0151      DO 430 LL=1,20
0152 430 IF (RLNE(LL) .EQ. 0) RLNE(LL)=RSPC
0154      KK=MOD(ICON(4),20)
0155      IF (KK .EQ. 0) KK=20
0157      RLNE(KK)=RLIDC
0158      WRITE(7'NR,ERR=999)(RLNE(I),I=1,20)
0159 420 ICON(4)=IFAD+ICON(4)
0160      ICON(3)=ISHFT(5,8)+ST(IND,4)
0161      ICON(2)=16
0162      ICON(5)=LEOF
0163      ICON(1)=ICVA
0164      ICFLG=1
0165      NRCNO=104
0166      NOREC=5
0167      ST(IND,1)=3012
0168      RETURN
0169 472 DO 471 J=1,8
0170      NR=(ST(IND,4)-1)*8+187+J
0171      READ(7'NR,ERR=999)(MOUT(I,J),I=1,10)
0172 471 WRITE(8'J+50)(MOUT(I,J),I=1,10)
0173      NRCNO=51
0174      NOREC=8
0175      ST(IND,1)=3007
0176      RETURN
0177      END
```

>
*** MTO: -- SELECT ERROR

P4000

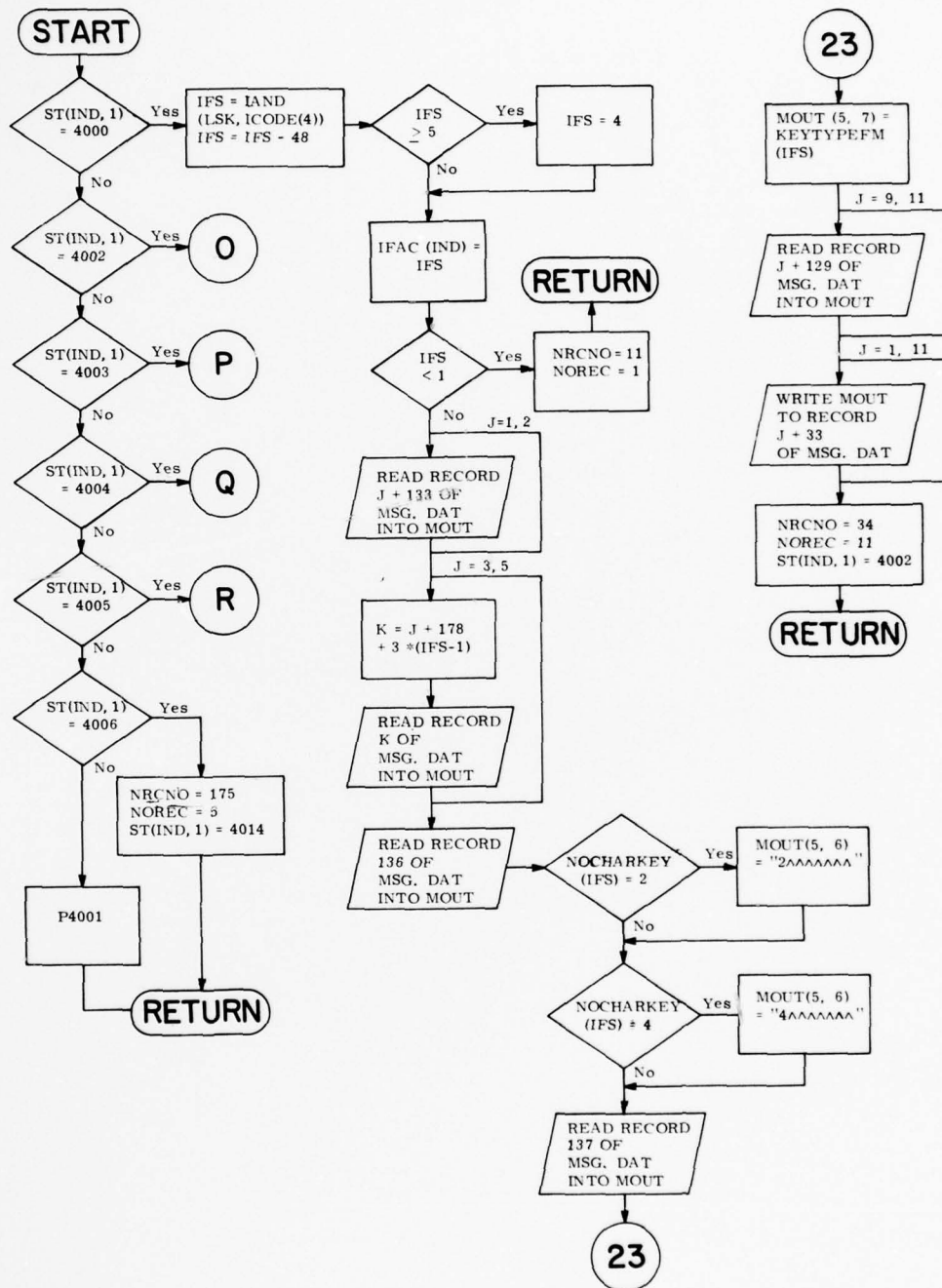


Figure 1-14. P4000

P4000 (cont.)

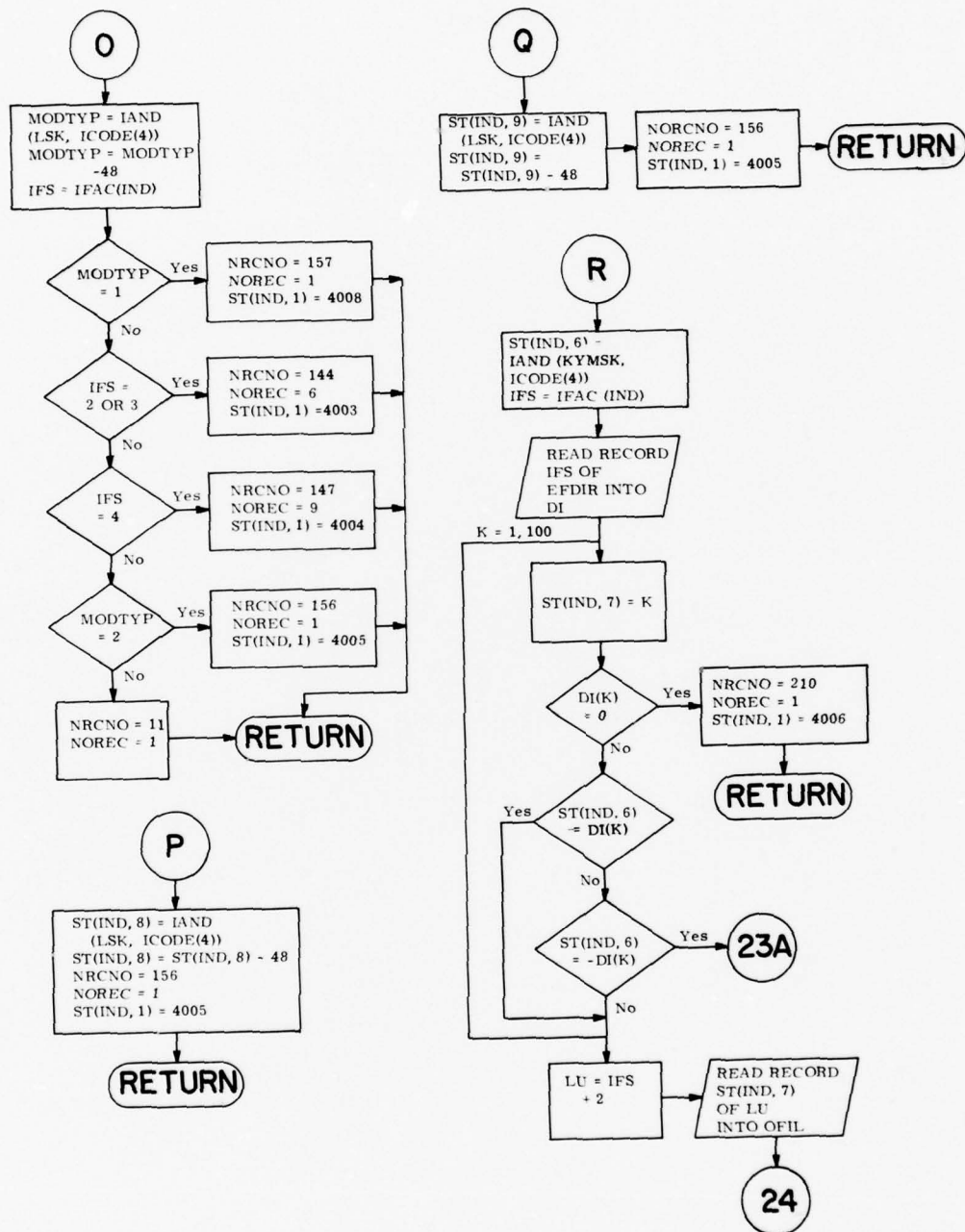


Figure 1-14. (Cont.)

P4000(cont.)

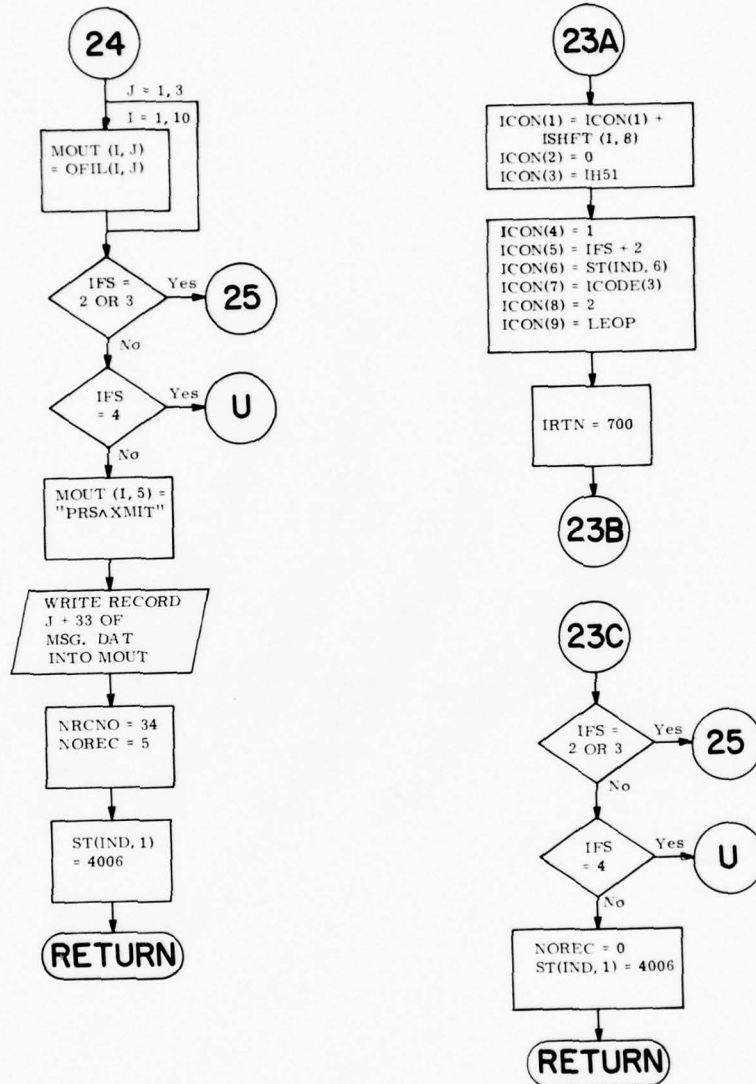


Figure 1-14. (Cont.)

P4000(cont.)

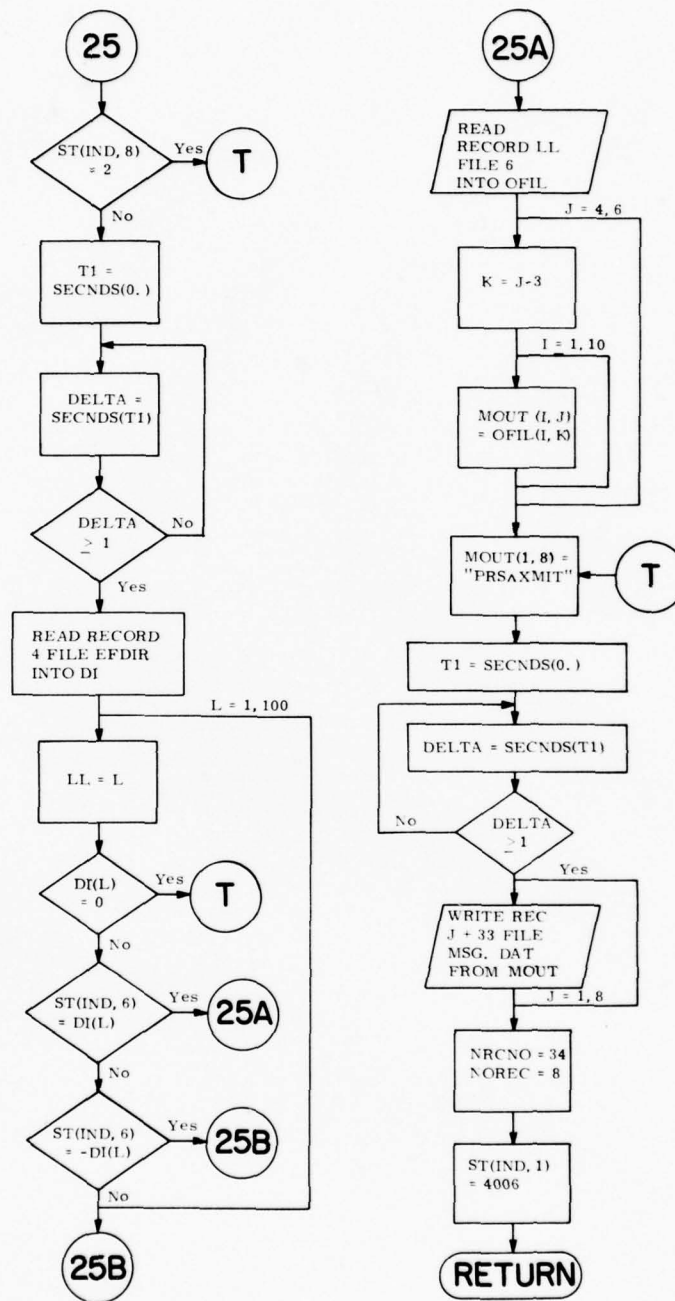


Figure 1-14. (Cont.)

P4000(cont.)

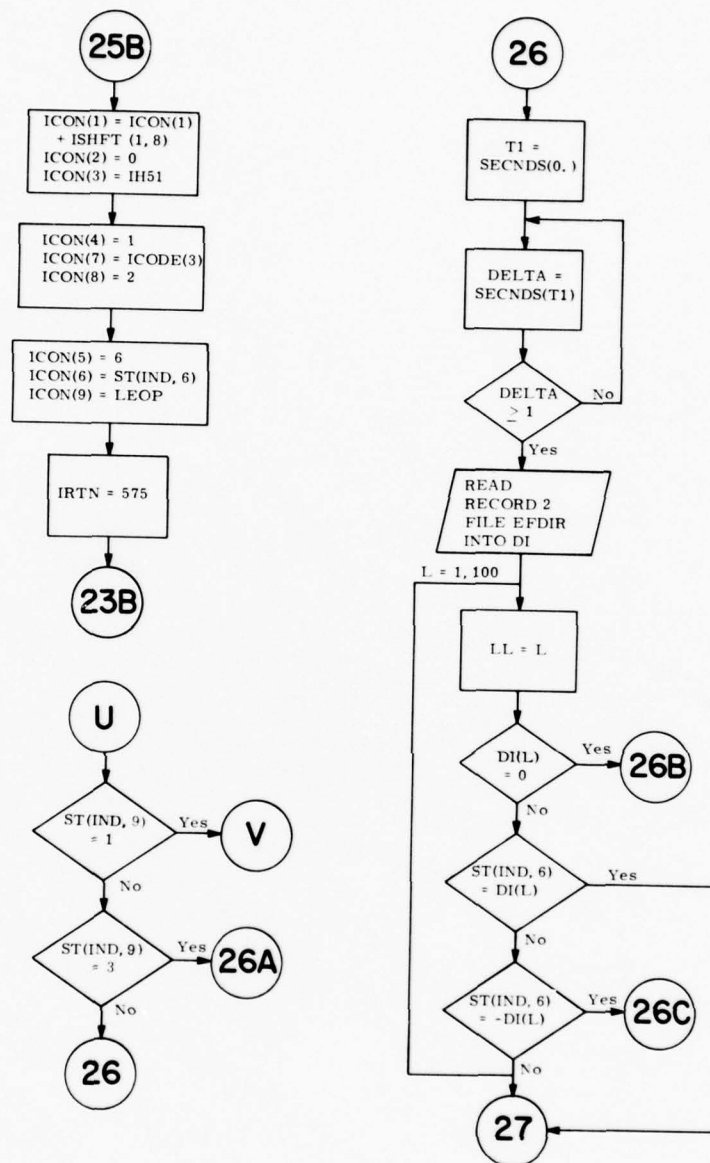


Figure 1-14. (Cont.)

P4000 (cont.)

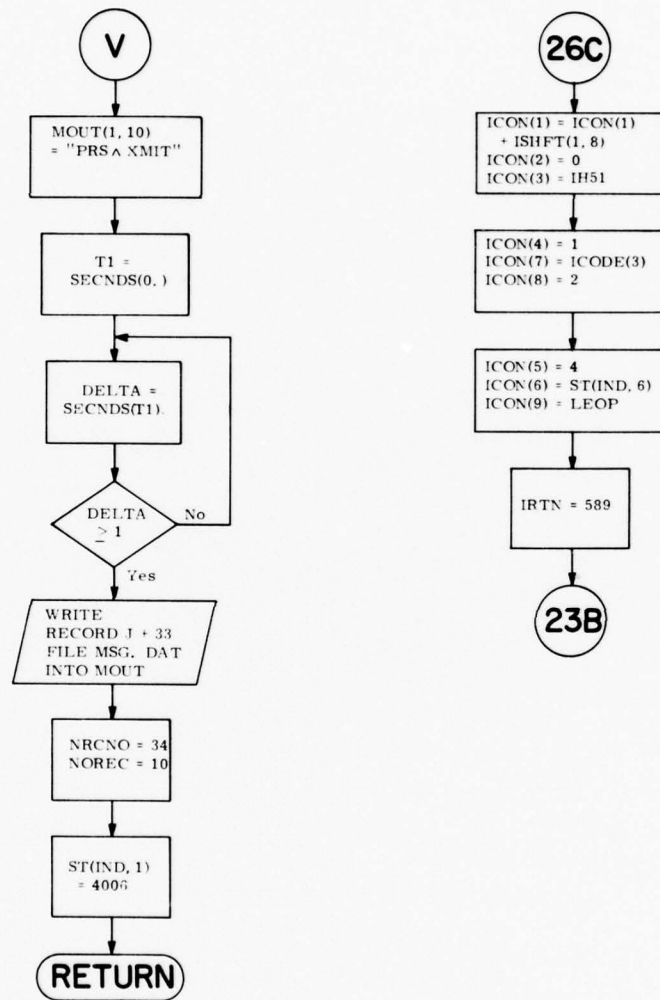


Figure 1-14. (Cont.)

P4000(cont.)

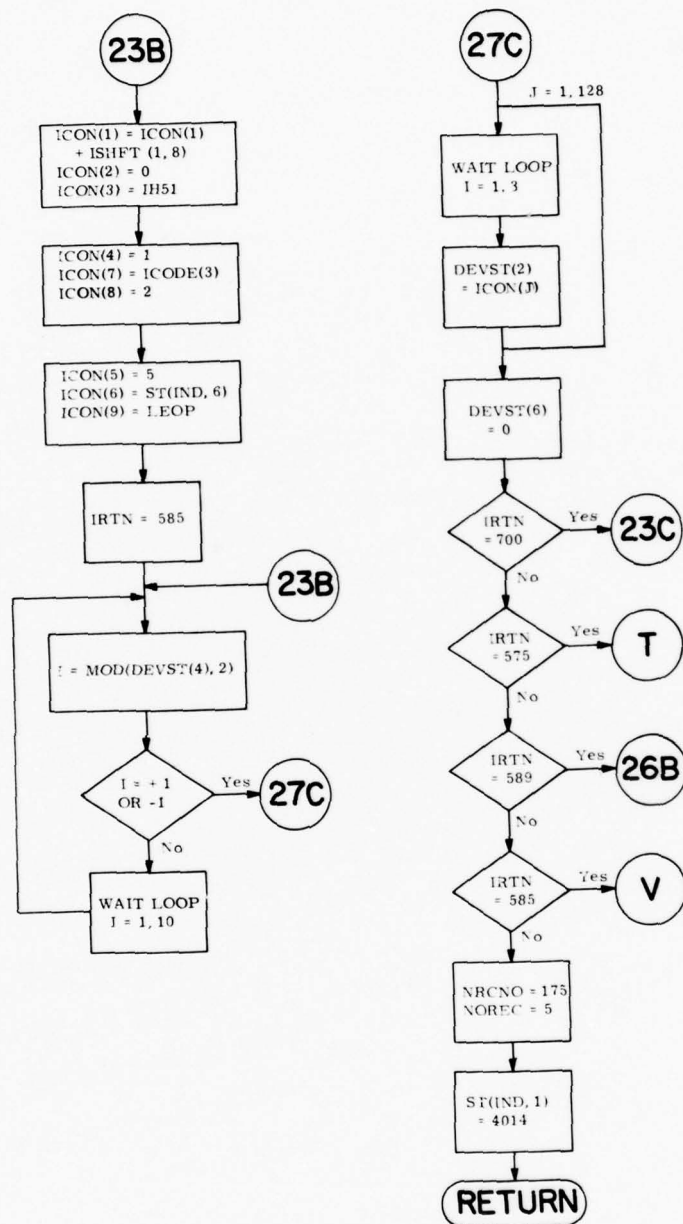


Figure 1-14. (Cont.)

P4000(cont.)

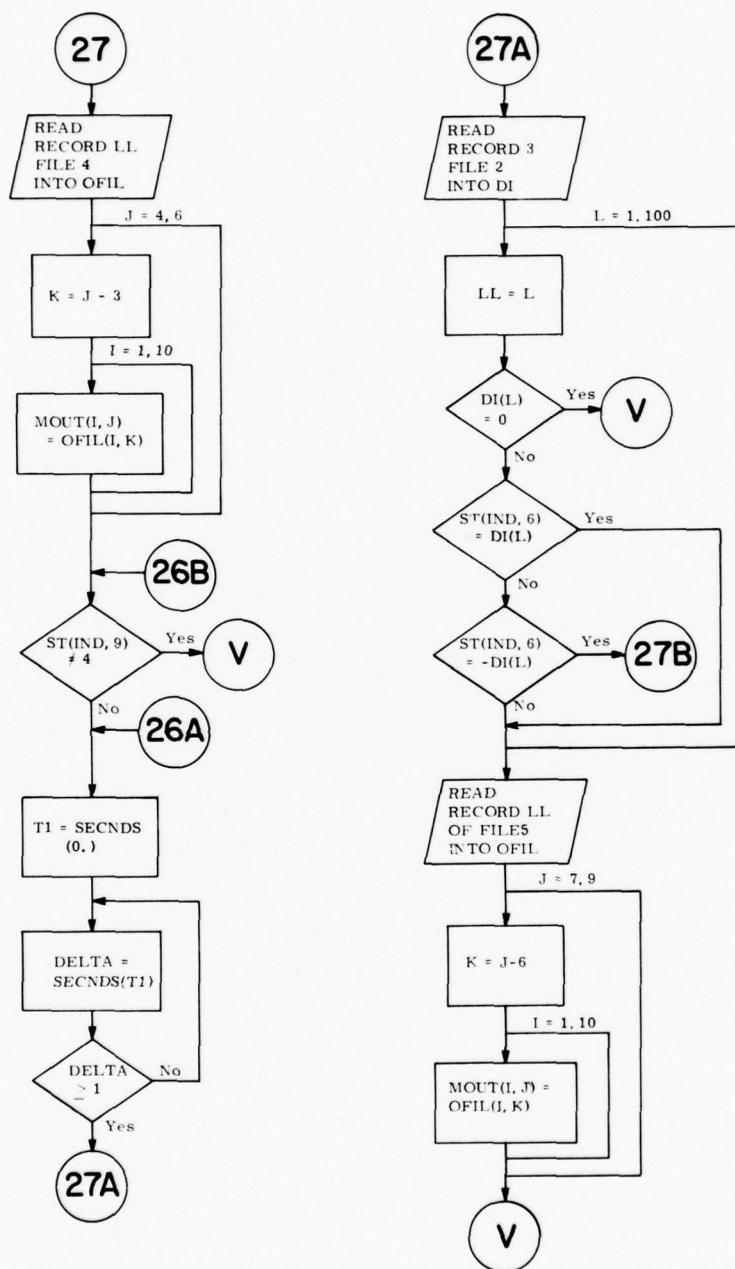


Figure 1-14. (Cont.)

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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PAGE 001

P4000, OBJ=P4000, FOR/NOSN/LI:1

```

0001      SUBROUTINE P4000
      C
      C
      C      FILE ACCESS MODE OF OPERATION
      C
0002      REAL*8 MOUT, Q20, Q40, KEYTYPEFN, XMT, OFIL,
1      ST1, STD, ADE, UPD, NOI, LID, TAB, NWD
0003      INTEGER ST, DI
0004      INTEGER DEVST(6)
0005      COMMON NOI, LID, TAB, NWD, ST(3,9), IND
0006      DIMENSION OFIL(10,3), DI(100)
0007      COMMON /DSK/ I1, I2, I3, I4, I5, I6, I16
0008      COMMON /U000/ MOUT(10,11), NRCNO, NOREC
0009      COMMON /M004/ NOCHARKEY(10), KEYTYPEFN(10)
0010      COMMON /F01/ IFAC(3)
0011      COMMON /LOOP/ ICODE(128), MSK, LSK
0012      COMMON /CPAC/ ICON(128), ICFLG
0013      COMMON /M1710/ DEVST
0014      DATA Q20, Q40 /8H2      , 8H4      /
0015      DATA XMT, ST1, STD /
1'PRS XMT//ST.      //ST. DO Y//
0016      DATA NOCHARKEY/2,2,2,2,4,2,4,2,2,2/
0017      DATA KEYTYPEFN/8H LET-DIG, 8H LET-DIG, 8H LET-DIG, 8H LET-DIG,
18HALPHANUM, 8H LET-DIG, 8HALPHANUM,
28HLET-DIG , 8H LET-DIG, 8H  DIGIT/
0018      DATA ADE//  ADDED//
0019      DATA UPD/8H UPDATED/
0020      DATA IH51, LEOP, KYMSK/"2401, "177777, "77577/
0021      IF (ST(IND,1) .EQ. 4000) GOTO 72
0023      IF (ST(IND,1) .EQ. 4002) GOTO 22
0025      IF (ST(IND,1) .EQ. 4003) GOTO 23
0027      IF (ST(IND,1) .EQ. 4004) GOTO 24
0029      IF (ST(IND,1) .EQ. 4005) GOTO 25
0031      IF (ST(IND,1) .EQ. 4006) GOTO 26
0033      CALL P4001
0034      RETURN
0035      22 MODTYP=IAND(LSK, ICODE(4))
0036      MODTYP=MODTYP-48
0037      IFS=IFAC(IND)
      C      RD TYPE OF MOD
      C      NO MODIFICATION - ACCESS ONLY
      C      CK FOR CROSS-REFERENCING
0038      IF (MODTYP .EQ. 1) GOTO 260
0040      IF (IFS .EQ. 2) GOTO 278
0042      IF (IFS .EQ. 3) GOTO 278
0044      IF (IFS .EQ. 4) GOTO 279
0046      IF (MODTYP .EQ. 2) GOTO 263
0048      GOTO 73
0049      278 NRCNO=140
0050      NOREC=6
0051      ST(IND,1)=4003
0052      RETURN
0053      279 NRCNO=147
0054      NOREC=9
0055      ST(IND,1)=4004
0056      RETURN

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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PAGE 002

P4000.00J=P4000. FOR/NOSN/LI:1

```

0057 260 NRCNO=157
0058 NOREC=1
0059 ST(IND,1)=4003
0060 RETURN
0061 263 NRCNO=156
0062 ST(IND,1)=4005
0063 NOREC=1
0064 RETURN
0065 23 ST(IND,8)=IAND(LSK,ICODE(4))
0066 ST(IND,8)=ST(IND,8)-48
C READ CROSS-REF 1
0067 NRCNO=156
0068 NOREC=1
0069 ST(IND,1)=4005
0070 RETURN
0071 24 ST(IND,9)=IAND(LSK,ICODE(4))
0072 ST(IND,9)=ST(IND,9)-48
C RD C-R 2
0073 NRCNO=156
0074 NOREC=1
0075 ST(IND,1)=4005
0076 RETURN
0077 25 ST(IND,6)=IAND(KYMSK,ICODE(4))
0078 IFS=IFAC(IND)
C GET ST(IND,6)
0079 READ(2,IFS,ERR=73)(DI(I),I=1,100)
0080 DO 550 K=1,100
0081 ST(IND,7)=K
0082 IF (DI(K).EQ.0) GOTO 565
0084 IF (ST(IND,6).EQ.DI(K)) GOTO 560
0086 IF (ST(IND,6).EQ.-DI(K)) GOTO 600
0088 550 CONTINUE
C KEY EXISTS
0089 560 LU = IFS+2
0090 READ(LU,ST(IND,7),ERR=73)((OFIL(I,J),I=1,10),J=1,3)
0091 DO 582 J=1,3
0092 DO 582 I=1,10
0093 582 MOUT(I,J)=OFIL(I,J)
0094 IF (IFS.EQ.2) GOTO 570
0096 IF (IFS.EQ.3) GOTO 570
0098 IF (IFS.EQ.4) GOTO 580
C ELSE NO C-R
0100 MOUT(1,5)=XMT
0101 DO 5100 J=1,5
0102 5100 WRITE(8,J+33)(MOUT(I,J),I=1,10)
0103 NRCNO=34
0104 NOREC=5
0105 ST(IND,1)=4006
0106 RETURN
0107 600 ICON(1)=ICON(1)+ISHFT(1,8)
0108 ICON(2)=0
0109 ICON(3)=IH51
0110 ICON(4)=1
0111 ICON(5)=IFS+2
0112 ICON(6)=ST(IND,6)
0113 ICON(7)=ICODE(3)

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]FRI 18-MAR-77 19:08:18 PAGE 003
P4000.0BJ=P4000. FOR/NOSN/LI:1

```
0114      ICON(8)=2
0115      ICON(9)=LEOP
0116      IRTN=700
0117      GOTO 710
0118  700  IF (IFS .EQ. 2) GOTO 570
0120      IF (IFS .EQ. 3) GOTO 570
0122      IF (IFS .EQ. 4) GOTO 580
0124      NOREC=0
0125      ST(IND,1)=4006
0126      RETURN
C        RECORD NOT EXIST(NK)
0127  565  NRCNO=210
0128      NOREC=1
0129      ST(IND,1)=4006
0130      RETURN
C        C-R IFS=04
0131  570  IF (ST(IND,8) .EQ. 2) GOTO 575
0133      T1=SECNDS(0.)
0134  1000 DELTA=SECNDS(T1)
0135      IF (DELTA .GE. 1) GOTO 640
0137      GOTO 1000
C        ELSE LOCATE RECORD
0138  640  READ(2,4,ERR=73)((DI(I), I=1,100)
0139      DO 571 L=1,100
0140      LL=L
0141      IF (DI(L) .EQ. 0) GOTO 575
0143      IF (ST(IND,6) .EQ. DI(L)) GOTO 572
0145      IF (ST(IND,6) .EQ. -DI(L)) GOTO 660
0147  571  CONTINUE
0148  572  READ(6,LL,ERR=73)((OFIL(I,J), I=1,10), J=1,3)
0149      DO 573 J=4,6
0150      K=J-3
0151      DO 573 I=1,10
0152      573  MOUT(I,J)=OFIL(I,K)
0153      575  MOUT(1,8)=XMT
0154      T1=SECNDS(0.)
0155  1010 DELTA=SECNDS(T1)
0156      IF (DELTA .GE. 1) GOTO 1020
0158      GOTO 1010
0159  1020  DO 5110 J=1,8
0160  5110  WRITE(8,J+33)(MOUT(I,J), I=1,10)
0161      661  NRCNO=34
0162      NOREC=8
0163      ST(IND,1)=4006
0164      RETURN
0165  660  ICON(1)=ICON(1)+ISHFT(1,8)
0166      ICON(2)=0
0167      ICON(3)=IH51
0168      ICON(4)=1
0169      ICON(7)=ICODE(2)
0170      ICON(8)=2
0171      ICON(5)=6
0172      ICON(6)=ST(IND,6)
0173      ICON(9)=LEOP
0174      IRTN=575
0175      GOTO 710
```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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PAGE 004

P4000.OBJ=P4000.FOR/NOSN/LI:1

```

C      C-R IFS=2,3
0176   580 IF (ST(IND,9) .EQ. 1) GOTO 585
0178       IF (ST(IND,9) .EQ. 3) GOTO 583
0180       T1=SECNDS(0)
0181   1030 DELTA=SECNDS(T1)
0182       IF (DELTA .GE. 1) GOTO 650
0184       GOTO 1030
0185   650 READ(2,2,ERR=73)(DI(I), I=1,100)
0186       DO 584 L=1,100
0187       LL=L
0188       IF (DI(L) .EQ. 0) GOTO 589
0190       IF (ST(IND,6) .EQ. DI(L)) GOTO 586
0192       IF (ST(IND,6) .EQ. -DI(L)) GOTO 670
0194   584 CONTINUE
0195   586 READ(4,LL,ERR=73)((OFIL(I,J), I=1,10), J=1,3)
0196       DO 87 J=4,6
0197       K=J-3
0198       DO 87 I=1,10
0199       87 MOUT(I,J)=OFIL(I,K)
0200   589 IF (ST(IND,9) .NE. 4) GOTO 585
0202   583 T1=SECNDS(0)
0203   1040 DELTA=SECNDS(T1)
0204       IF (DELTA .GE. 1) GOTO 1050
0206       GOTO 1040
0207   1050 READ(2,2,ERR=73)(DI(I), I=1,100)
0208       DO 588 L=1,100
0209       LL=L
0210       IF (DI(L) .EQ. 0) GOTO 585
0212       IF (ST(IND,6) .EQ. DI(L)) GOTO 591
0214       IF (ST(IND,6) .EQ. -DI(L)) GOTO 680
0216   588 CONTINUE
0217   591 READ(5,LL,ERR=73)((OFIL(I,J), I=1,10), J=1,3)
0218       DO 592 J=7,9
0219       K=J-6
0220       DO 592 I=1,10
0221       592 MOUT(I,J)=OFIL(I,K)
0222   585 MOUT(1,10)=XMT
0223       T1=SECNDS(0)
0224   1060 DELTA=SECNDS(T1)
0225       IF (DELTA .GE. 1) GOTO 1070
0227       GOTO 1060
0228   1070 DO 5120 J=1,10
0229   5120 WRITE(8,J+23)(MOUT(I,J), I=1,10)
0230       NRCNO=34
0231       NOREC=10
0232       ST(IND,1)=4006
0233       RETURN
0234   670 ICON(1)=ICON(1)+ISHFT(1,8)
0235       ICON(2)=0
0236       ICON(3)=IHS1
0237       ICON(4)=1
0238       ICON(7)=ICODE(3)
0239       ICON(8)=2
0240       ICON(5)=4
0241       ICON(6)=ST(IND,6)
0242       ICON(9)=LEOP

```


FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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P4000.00J=P4000.FOR/NOSN/LI:1

```

0243      IRTN=589
0244      GOTO 710
0245      680 ICON(1)=ICON(1)+ISHFT(1,8)
0246      ICON(2)=0
0247      ICON(3)=IH51
0248      ICON(4)=1
0249      ICON(7)=IC00E(3)
0250      ICON(8)=2
0251      ICON(5)=5
0252      ICON(6)=ST(IND,6)
0253      ICON(9)=LEOP
0254      IRTN=585
0255      710 I=MOD(DEVST(4),2)
0256      IF (I.EQ. 1) GOTO 40
0258      IF (I.EQ. -1) GOTO 40
0260      DO 60 I=1,10
0261      60 CONTINUE
0262      GOTO 710
0263      40 DO 71 J=1,128
0264      DO 80 I=1,3
0265      80 CONTINUE
0266      71 DEVST(2)=ICON(J)
0267      DEVST(6)=0
0268      IF (IRTN.EQ. 700) GOTO 700
0270      IF (IRTN.EQ. 575) GOTO 575
0272      IF (IRTN.EQ. 589) GOTO 589
0274      IF (IRTN.EQ. 585) GOTO 585
0276      26 NRCNO=175
0277      NOREC=5
0278      ST(IND,1)=4014
0279      RETURN
C      GET FILE SELECTED
0280      72 IFS=IAND(LSK,IC00E(4))
0281      IFS=IFS-48
C      CK FOR INVALID ENTRY
0282      IF (IFS.GE. 5) IFS=4
0284      IFAC(IND)=IFS
0285      IF (IFS.GE. 1) GOTO 70
0287      73 NRCNO=11
0288      NOREC=1
0289      RETURN
70      DO 75 J=1,2
0291      75 READ(8/133+J)(MOUT(I,J),I=1,10)
0292      DO 76 J=3,5
0293      K=J+178+3*(IFS-1)
0294      76 READ(8/K)(MOUT(I,J),I=1,10)
0295      READ(8/136)(MOUT(I,6),I=1,10)
0296      IF (NOCHARKEY(IFS).EQ. 2) MOUT(5,6)=020
0298      IF (NOCHARKEY(IFS).EQ. 4) MOUT(5,6)=040
0300      READ(8/137)(MOUT(I,7),I=1,10)
0301      MOUT(5,7)=KEYTYPEFM(IFS)
0302      DO 77 J=9,11
0303      77 READ(8/129+J)(MOUT(I,J),I=1,10)
0304      DO 95 J=1,11
0305      95 WRITE(8/J+22)(MOUT(I,J),I=1,10)
0306      NRCNO=34

```

FORTRAN IV V018-02
CORE=08K, UIC=[20,20]

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PAGE 006

P4000.0BJ=P4000.FOR/N05N/LI:1

0307 NOREC=11
0308 ST(IND,1)=4002
0309 RETURN
0310 END

FORTRAN IV DIAGNOSTICS

[WARNING] MSG #092 VARIABLE "NOCHAR" NAME EXCEEDS 6 CHARACTERS
[WARNING] MSG #092 VARIABLE "KEYTYP" NAME EXCEEDS 6 CHARACTERS

FOR -- [P4000] ERRORS: 0, WARNINGS: 2
>

FORTRAN IV V01B-02 FRI 18-MAR-77 19:20:00 PAGE 001
 CORE=03K, UIC=[20,20] 40001.0BJ=P40001.FOR/NOSN/LI:1

```

0001      SUBROUTINE P4000
      C
      C
      C      FILE ACCESS MODE OF OPERATION
      C
0002      REAL*8 MOUT, Q20, Q40, KEYTYPEFM, XMT, OFIL,
1      ST1, STD, ADE, UPD, NOI, LID, TAB, NWD
0003      INTEGER ST, DI
0004      INTEGER DEVST(6)
0005      COMMON NOI, LID, TAB, NWD, ST(3,9), IND
0006      DIMENSION OFIL(10,3), DI(100)
0007      COMMON /OSK/ I1, I2, I3, I4, I5, I6, I16
0008      COMMON /U000/ MOUT(10,11), NRCNO, NOREC
0009      COMMON /MD04/ NOCHARKEY(10), KEYTYPEFM(10)
0010      COMMON /F01/ IFAC(3)
0011      COMMON /LOOP/ ICODE(128), MSK, LSK
0012      COMMON /CPAC/ ICON(128), ICFLG
0013      COMMON /M1710/ DEVST
0014      DATA Q20, Q40 /8H2, 8H4 /
0015      DATA XMT, ST1, STD /
1'PRS XMT', 'ST, 'ST, DO Y' /
0016      DATA NOCHARKEY/2,2,2,2,4,2,4,2,2,2 /
0017      DATA KEYTYPEFM/8H LET-DIG, 8H LET-DIG, 8H LET-DIG, 8H LET-DIG,
13HALPHANUM, 8H LET-DIG, 8HALPHANUM,
28HLET-DIG, 8H LET-DIG, 8H DIGIT /
0018      DATA ADE/ ' ADDED' /
0019      DATA UPD/8H UPDATED /
0020      DATA IH51, LEOP, KYMSK/ "405, "177777, "775777 /
0021      IF (ST(IND,1) .EQ. 4000) GOTO 72
0023      IF (ST(IND,1) .EQ. 4002) GOTO 22
0025      IF (ST(IND,1) .EQ. 4003) GOTO 23
0027      IF (ST(IND,1) .EQ. 4004) GOTO 24
0029      IF (ST(IND,1) .EQ. 4005) GOTO 25
0031      IF (ST(IND,1) .EQ. 4006) GOTO 26
0033      CALL P4001
0034      RETURN
0035      22 MODTYP=IAND(LSK, ICODE(4))
0036      MODTYP=MODTYP-48
0037      IFS=IFAC(IND)
      C      RD TYPE OF MOD
      C      NO MODIFICATION - ACCESS ONLY
      C      CK FOR CROSS-REFERENCING
0038      IF (MODTYP .EQ. 1) GOTO 260
0040      IF (IFS .EQ. 2) GOTO 278
0042      IF (IFS .EQ. 3) GOTO 278
0044      IF (IFS .EQ. 4) GOTO 279
0046      IF (MODTYP .EQ. 2) GOTO 263
0048      GOTO 73
0049      278 NRCNO=140
0050      NOREC=6
0051      ST(IND,1)=4003
0052      RETURN
0053      279 NRCNO=147
0054      NOREC=9
0055      ST(IND,1)=4004
0056      RETURN

```

FORTRAN IV V018-02
CORE=03K, UIC=[20,20]

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40001.0BJ=P40001.FOR/NOSH/LI:1

```

0057 260 NRCNO=157
0058 NOREC=1
0059 ST(IND,1)=4008
0060 RETURN
0061 263 NRCNO=156
0062 ST(IND,1)=4005
0063 NOREC=1
0064 RETURN
0065 23 ST(IND,8)=IAND(LSK,ICODE(4))
0066 ST(IND,8)=ST(IND,8)-48
C READ CROSS-REF 1
0067 NRCNO=156
0068 NOREC=1
0069 ST(IND,1)=4005
0070 RETURN
0071 24 ST(IND,9)=IAND(LSK,ICODE(4))
0072 ST(IND,9)=ST(IND,9)-48
C RD C-R 2
0073 NRCNO=156
0074 NOREC=1
0075 ST(IND,1)=4005
0076 RETURN
0077 25 ST(IND,6)=IAND(KYMSK,ICODE(4))
0078 IFS=IFAC(IND)
C GET ST(IND,6)
0079 READ(2,IFS,ERR=73)((O(I),I=1,100)
0080 DO 550 K=1,100
0081 ST(IND,7)=K
0082 IF (O(K) .EQ. 0) GOTO 565
0083 IF (ST(IND,6) .EQ. O(K)) GOTO 560
0084 IF (ST(IND,6) .EQ. -O(K)) GOTO 600
0085 550 CONTINUE
C KEY EXISTS
0089 560 LU = IFS+2
0090 READ(LU,ST(IND,7),ERR=73)((O(I),I=1,10),J=1,3)
0091 DO 582 J=1,3
0092 DO 582 I=1,10
0093 582 MOUT(I,J)=O(I,J)
0094 IF (IFS .EQ. 2) GOTO 570
0095 IF (IFS .EQ. 3) GOTO 570
0096 IF (IFS .EQ. 4) GOTO 580
C ELSE NO C-R
0100 MOUT(1,5)=XMT
0101 DO 5100 J=1,5
0102 5100 WRITE(8,J+23)(MOUT(I,J),I=1,10)
0103 NRCNO=24
0104 NOREC=5
0105 ST(IND,1)=4006
0106 RETURN
0107 600 ICON(1)=ICON(1)+ISHFT(1,8)
0108 ICON(2)=0
0109 ICON(3)=IH51
0110 ICON(4)=1
0111 ICON(5)=IFS+2
0112 ICON(6)=ST(IND,6)
0113 ICON(7)=ICODE(3)

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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PAGE 003

40001.0BJ=P40001.FOR/NOSN/LI:1

```
0114      ICON(8)=2
0115      ICON(9)=LEOP
0116      IRTN=700
0117      GOTO 710
0118 700 IF (IFS .EQ. 2) GOTO 570
0120      IF (IFS .EQ. 3) GOTO 570
0122      IF (IFS .EQ. 4) GOTO 580
0124      NOREC=0
0125      ST(IND,1)=4006
0126      RETURN
C        RECORD NOT EXIST(NK)
0127 565 NRCNO=210
0128      NOREC=1
0129      ST(IND,1)=4006
0130      RETURN
C        C-R IFS=04
0131 570 IF (ST(IND,8) .EQ. 2) GOTO 575
0133      T1=SECNDS(0.)
0134 1000 DELTA=SECNDS(T1)
0135      IF (DELTA .GE. 1) GOTO 640
0137      GOTO 1000
C        ELSE LOCATE RECORD
0138 640 READ(2,4,ERR=73)((DI(I),I=1,100)
0139      DO 571 L=1,100
0140      LL=L
0141      IF (DI(L) .EQ. 0) GOTO 575
0143      IF (ST(IND,6) .EQ. DI(L)) GOTO 572
0145      IF (ST(IND,6) .EQ. -DI(L)) GOTO 660
0147 571 CONTINUE
0148 572 READ(6,LL,ERR=73)((OFIL(I,J),I=1,10),J=1,3)
0149      DO 573 J=4,6
0150      K=J-3
0151      DO 573 I=1,10
0152 573 MOUT(I,J)=OFIL(I,K)
0153 575 MOUT(1,8)=XMT
0154      T1=SECNDS(0.)
0155 1010 DELTA=SECNDS(T1)
0156      IF (DELTA .GE. 1) GOTO 1020
0158      GOTO 1010
0159 1020 DO 5110 J=1,8
0160 5110 WRITE(8,J+22)(MOUT(I,J),I=1,10)
0161 661 NRCNO=34
0162      NOREC=0
0163      ST(IND,1)=4006
0164      RETURN
0165 660 ICON(1)=ICON(1)+ISHFT(1,8)
0166      ICON(2)=0
0167      ICON(3)=IHS1
0168      ICON(4)=1
0169      ICON(7)=ICODE(3)
0170      ICON(8)=2
0171      ICON(5)=6
0172      ICON(6)=ST(IND,6)
0173      ICON(9)=LEOP
0174      IRTN=575
0175      GOTO 710
```


FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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40001.06J=P40001.FOR/NOSN/LI:1

```

C      C-R IFS=2.3
0176   580 IF (ST(IND,9) .EQ. 1) GOTO 585
0178     IF (ST(IND,9) .EQ. 2) GOTO 583
0180     T1=SECNDS(0.)
0181   1030 DELTA=SECNDS(T1)
0182     IF (DELTA .GE. 1.) GOTO 650
0184     GOTO 1030
0185   650 READ(2,2,ERR=73)((DI(I), I=1,100)
0186     DO 584 L=1,100
0187     LL=L
0188     IF (DI(L) .EQ. 0) GOTO 589
0190     IF (ST(IND,6) .EQ. DI(L)) GOTO 586
0192     IF (ST(IND,6) .EQ. -DI(L)) GOTO 670
0194   584 CONTINUE
0195   586 READ(4,LL,ERR=73)((OFIL(I,J), I=1,10), J=1,3)
0196     DO 87 J=4,6
0197     K=J-3
0198     DO 87 I=1,10
0199     87 MOUT(I,J)=OFIL(I,K)
0200   589 IF (ST(IND,9) .NE. 4) GOTO 585
0202   583 T1=SECNDS(0.)
0203   1040 DELTA=SECNDS(T1)
0204     IF (DELTA .GE. 1) GOTO 1050
0206     GOTO 1040
0207   1050 READ(2,3,ERR=73)((DI(I), I=1,100)
0208     DO 588 L=1,100
0209     LL=L
0210     IF (DI(L) .EQ. 0) GOTO 585
0212     IF (ST(IND,6) .EQ. DI(L)) GOTO 591
0214     IF (ST(IND,6) .EQ. -DI(L)) GOTO 680
0216   588 CONTINUE
0217   591 READ(5,LL,ERR=73)((OFIL(I,J), I=1,10), J=1,3)
0218     DO 592 J=7,9
0219     K=J-6
0220     DO 592 I=1,10
0221     592 MOUT(I,J)=OFIL(I,K)
0222   585 MOUT(1,10)=XMT
0223     T1=SECNDS(0.)
0224   1060 DELTA=SECNDS(T1)
0225     IF (DELTA .GE. 1) GOTO 1070
0227     GOTO 1060
0228   1070 DO 5120 J=1,10
0229   5120 WRITE(8,J+23)((MOUT(I,J), I=1,10)
0230     NRCNO=24
0231     NOREC=10
0232     ST(IND,1)=4006
0233     RETURN
0234   670 ICON(1)=ICON(1)+ISHFT(1,8)
0235     ICON(2)=0
0236     ICON(3)=IH51
0237     ICON(4)=1
0238     ICON(7)=ICODE(3)
0239     ICON(8)=2
0240     ICON(5)=4
0241     ICON(6)=ST(IND,6)
0242     ICON(9)=LEOP

```

FORTRAN IV V01B-02
CORE=03K, UIC=[20,20]

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40001.00J=P40001.FOR/N05N/LI:1

```

0243      IRTN=589
0244      GOTO 710
0245 680   ICON(1)=ICON(1)+ISHFT(1,8)
0246      ICON(2)=0
0247      ICON(3)=IH51
0248      ICON(4)=1
0249      ICON(7)=ICODE(2)
0250      ICON(8)=2
0251      ICON(5)=5
0252      ICON(6)=ST(IND,6)
0253      ICON(9)=LEOP
0254      IRTN=585
0255 710   I=MOD(DEVST(4),2)
0256      IF (I.EQ. 1) GOTO 40
0258      IF (I.EQ. -1) GOTO 40
0260      DO 60 I=1,10
0261 60    CONTINUE
0262      GOTO 710
0263 40    DO 71 J=1,128
0264      DO 80 I=1,2
0265 80    CONTINUE
0266 71    DEVST(2)=ICON(J)
0267      DEVST(6)=0
0268      IF (IRTN.EQ. 700) GOTO 700
0270      IF (IRTN.EQ. 575) GOTO 575
0272      IF (IRTN.EQ. 589) GOTO 589
0274      IF (IRTN.EQ. 585) GOTO 585
0276 26    NRCNO=175
0277      NOREC=5
0278      ST(IND,1)=4014
0279      RETURN
C      GET FILE SELECTED
0280 72    IFS=IAND(LSK,ICODE(4))
0281      IFS=IFS-48
C      CK FOR INVALID ENTRY
0282      IF (IFS.GE. 5) IFS=4
0284      IFAC(IND)=IFS
0285      IF (IFS.GE. 1) GOTO 70
0287 73    NRCNO=11
0288      NOREC=1
0289      RETURN
70    DO 75 J=1,2
0291 75    READ(8'132+J')(MOUT(I,J),I=1,10)
0292      DO 76 J=3,5
0293      K=J+178+3*(IFS-1)
0294 76    READ(8'K')(MOUT(I,J),I=1,10)
0295      READ(8'136')(MOUT(I,6),I=1,10)
0296      IF (NOCHARKEY(IFS).EQ. 2) MOUT(5,6)=020
0298      IF (NOCHARKEY(IFS).EQ. 4) MOUT(5,6)=040
0300      READ(8'137')(MOUT(I,7),I=1,10)
0301      MOUT(5,7)=KEYTYPEFM(IFS)
0302      DO 77 J=9,11
0303 77    READ(8'129+J')(MOUT(I,J),I=1,10)
0304      DO 95 J=1,11
0305 95    WRITE(8'J+23')(MOUT(I,J),I=1,10)
0306      NRCNO=34

```

FORTRAN IV V01B-02
CORE=03K, UIC=[20,20]

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40001.OBJ=P40001 FOR/NOSN/LI:1

0307 NOREC=11
0308 ST(IND,1)=4002
0309 RETURN
0310 END

FORTRAN IV DIAGNOSTICS

[WARNING] MSG #092 VARIABLE "NOCHAR" NAME EXCEEDS 6 CHARACTERS
[WARNING] MSG #092 VARIABLE "KEYTYP" NAME EXCEEDS 6 CHARACTERS

FOR -- [P4000] ERRORS: 0, WARNINGS: 2
>

FOR HST.OBJ=HST.FOR/NOSN/LI:1

P4001

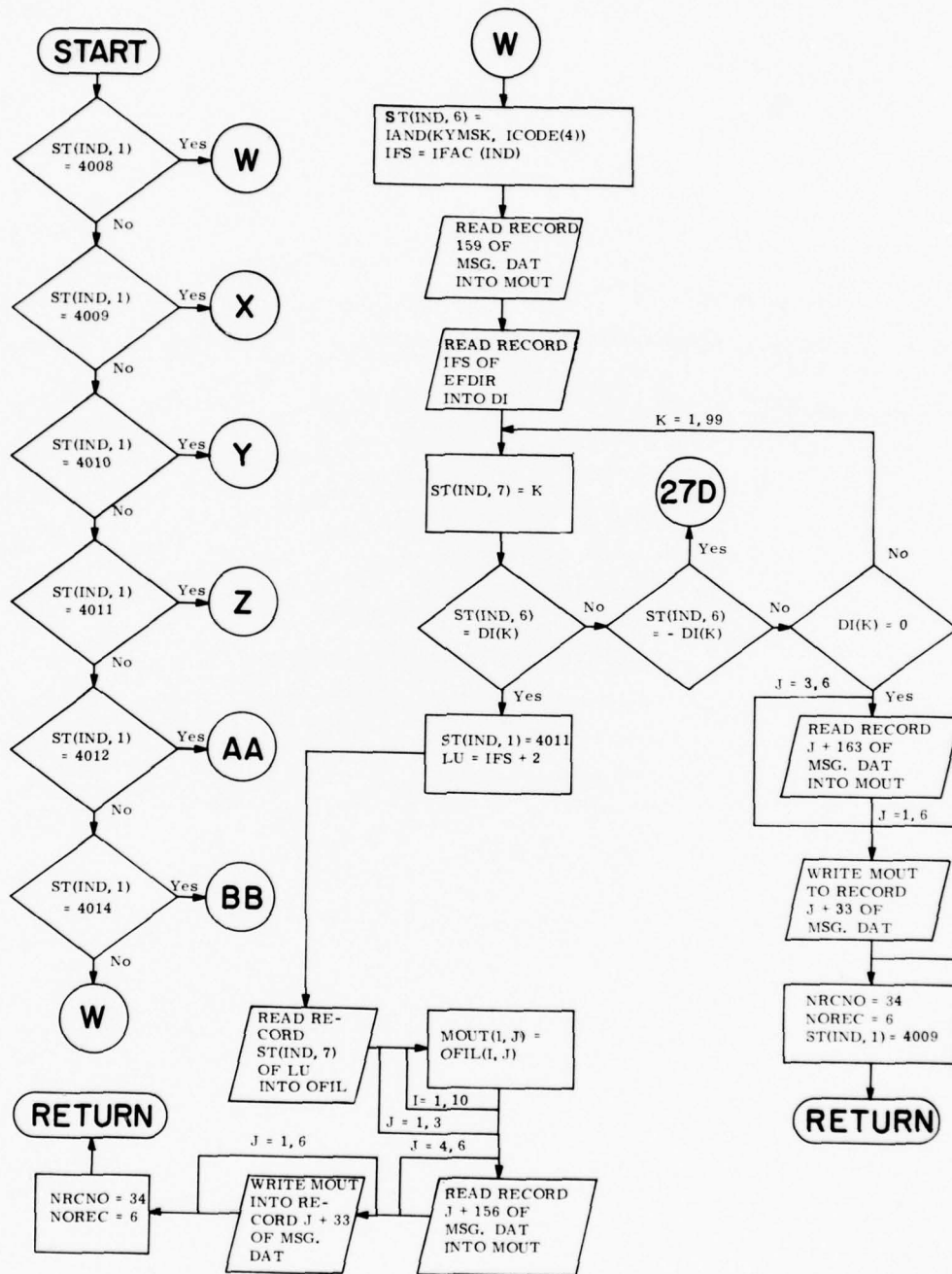


Figure 1-15. P4001

P4001(cont.)

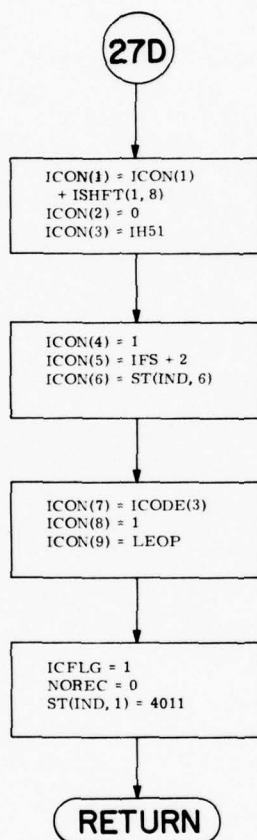


Figure 1-15. (Cont.)

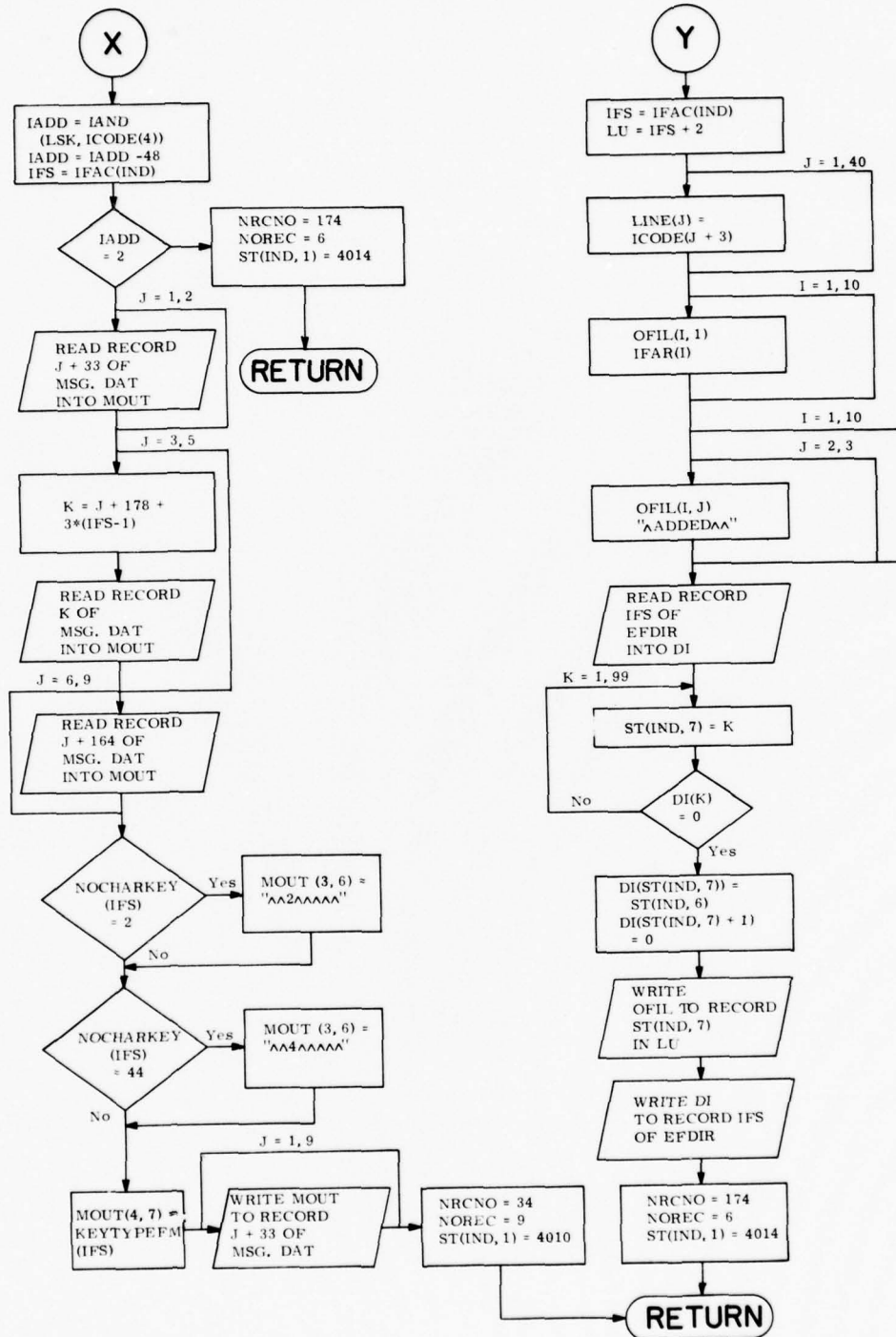


Figure 1-15. (Cont.)

P400I (cont.)

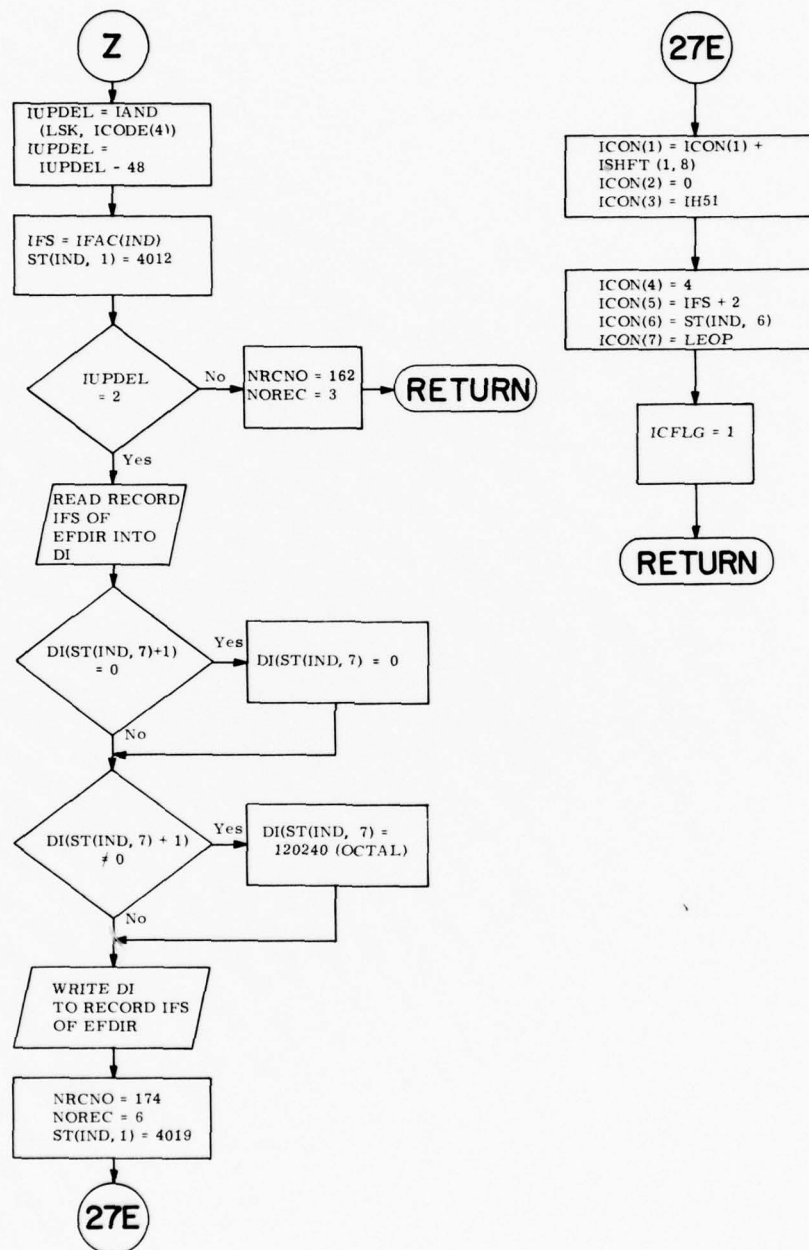


Figure 1-15. (Cont.)

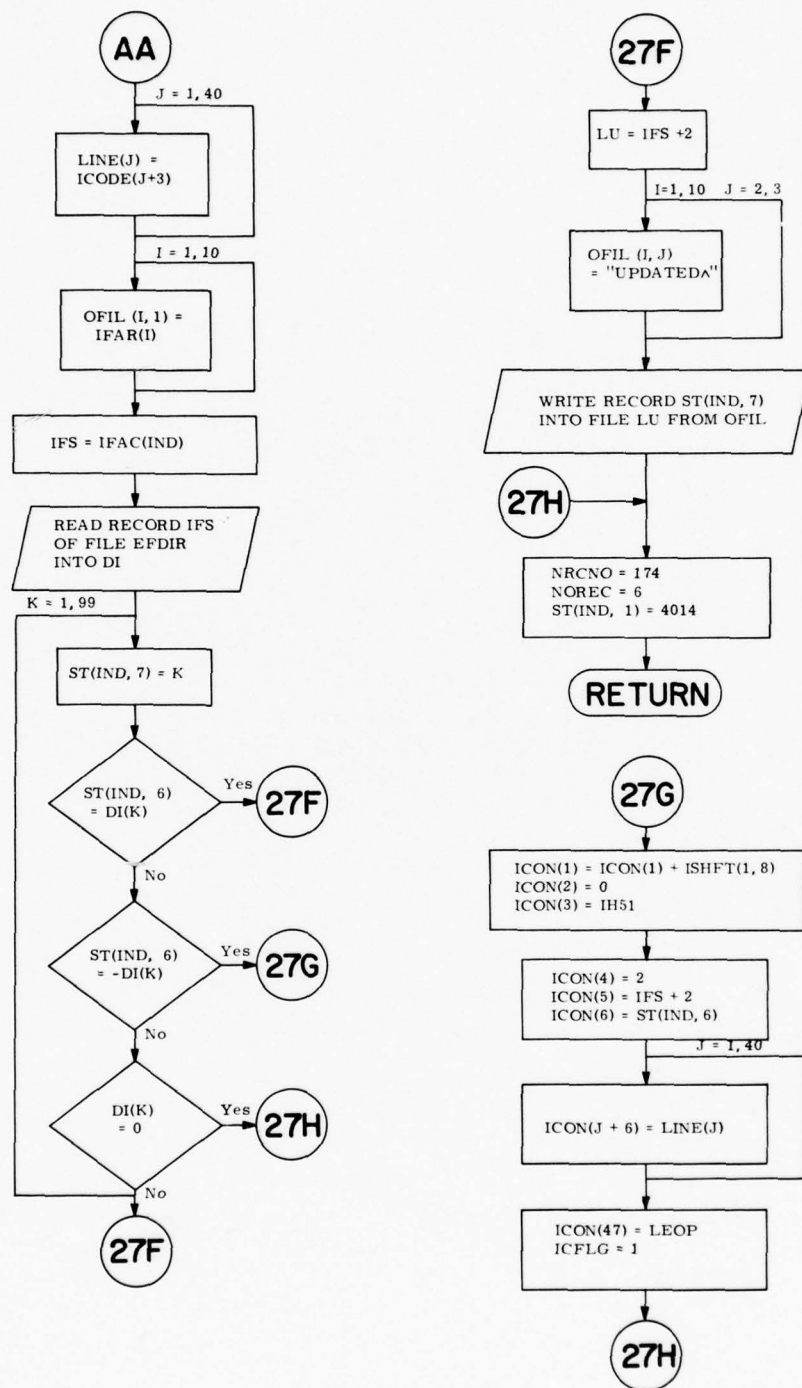


Figure 1-15. (Cont.)

P4001 (cont.)

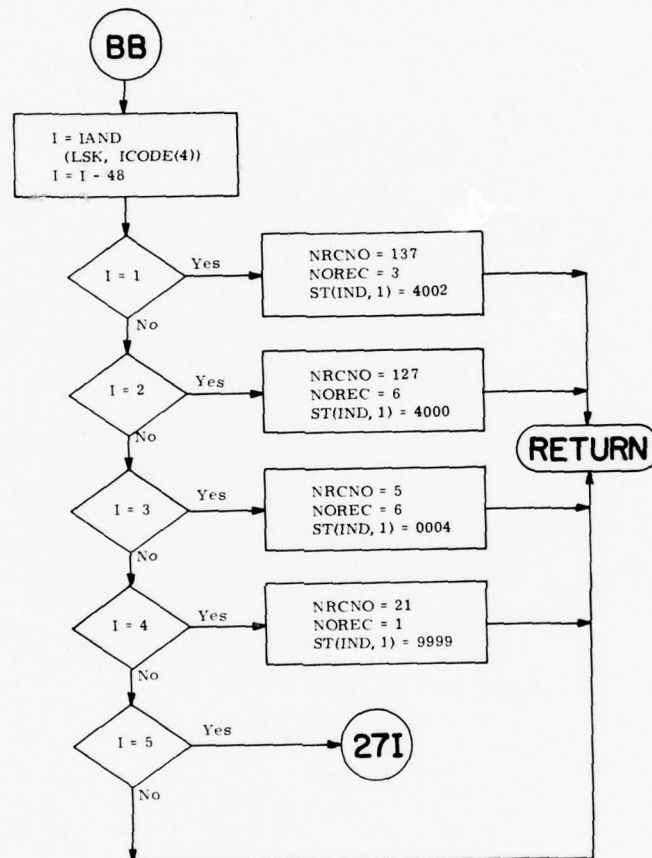


Figure 1-15. (Cont.)

P4001 (cont.)

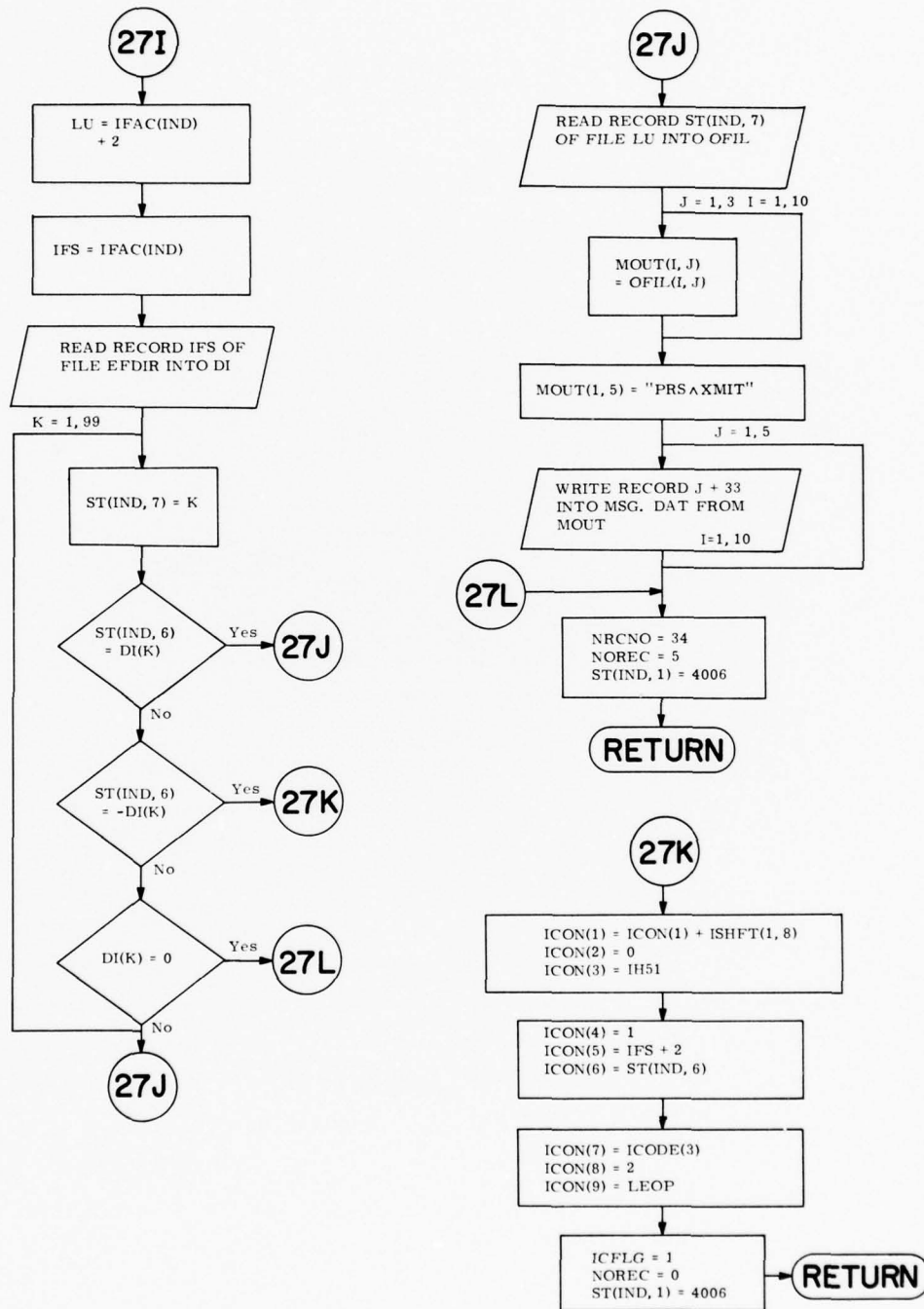


Figure 1-15. (Cont.)

FORTRAN IV V01B-02 FRI 18-MAR-77 19:15:58 PAGE 001
 CORE=0BK, UIC=E20,203 P4001.OBJ=P4001.FOR/NOSN/LI:1

```

0001      SUBROUTINE P4001
      C
      C
      C      FILE ACCESS MODE OF OPERATION
      C
0002      REAL*8 MOUT,Q2Q,Q4Q,KEYTYPEFM,XMT,OFIL,
1        ST1,STD,ADE,UFD,NDI,LID,TAB,NWD
0003      INTEGER ST,DI
0004      DIMENSION OFIL(10,3),DI(100)
0005      COMMON NDI,LID,TAB,NWD,ST(3,9),IND
0006      COMMON /DSK/ I1,I2,I3,I4,I5,I6,I16
0007      COMMON /U000/ MOUT(10,11),NRCNO,NOREC
0008      COMMON /MD04/ NOCHARKEY(10),KEYTYPEFM(10)
0009      COMMON /F01/IFAC(3)
0010      COMMON /LOOP/ICODE(128),MSK,LSK
0011      COMMON /CPAC/ICDN(128),ICFLG
0012      REAL*8 IFAR
0013      DIMENSION LINE(40),IFAR(10)
0014      EQUIVALENCE(LINE,IFAR)
0015      DATA Q2Q,Q4Q/' 2      ',' 4      '/
0016      DATA XMT,ST1,STD/
1'PRS XMIT','ST.      ','ST. DO Y'/
0017      DATA ADE/' ADDED '/
0018      DATA UFD/'UPDATED '/
0019      DATA ISPC/'120240/
0020      DATA IH51,LEOF,KYMSK/'2401','177777','77577/
0021      IF (ST(IND,1) .EQ. 4008) GOTO 28
0023      IF (ST(IND,1) .EQ. 4009) GOTO 29
0025      IF (ST(IND,1) .EQ. 4010) GOTO 30
0027      IF (ST(IND,1) .EQ. 4011) GOTO 31
0029      IF (ST(IND,1) .EQ. 4012) GOTO 32
0031      IF (ST(IND,1) .EQ. 4014) GOTO 34
0033      28 ST(IND,6)=IAND(KYMSK,ICODE(4))
0034      IFS=IFAC(IND)
      C      FOR RECORD MODIFICATION
      C      RECORD LOCK OCCURS HERE
0035      READ(8'159')(MOUT(I,1),I=1,10)
0036      READ(2'IFS,ERR=1415)(DI(I),I=1,100)
0037      DO 850 K=1,99
0038      ST(IND,7)=K
0039      IF (ST(IND,6) .EQ. DI(K)) GOTO 864
0041      IF (ST(IND,6) .EQ. -DI(K)) GOTO 500
0043      850 IF (DI(K) .EQ. 0) GOTO 860
      C      RECORD DOES NOT EXIST
0045      860 CONTINUE
0046      DO 886 J=3,6
0047      886 READ(8'J+163')(MOUT(I,J),I=1,10)
0048      DO 890 J=1,6
0049      890 WRITE(8'33+J')(MOUT(I,J),I=1,10)
0050      NRCNO=34
0051      NOREC=6
0052      ST(IND,1)=4009
0053      RETURN
      C      RECORD EXISTS
0054      864 ST(IND,1)=4011
0055      LU=IFS+2

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

FRI 18-MAR-77 19:15:58

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P4001.OBJ=P4001.FOR/NOSN/LI:1

```
0056      READ(LU'ST(IND,7),ERR=1415)((OFIL(I,J),I=1,10),J=1,3)
0057      DO 883 J=1,3
0058      DO 883 I=1,10
0059      883 MOUT(I,J)=OFIL(I,J)
0060      DO 884 J=4,6
0061      884 READ(8'J+156)(MOUT(I,J),I=1,10)
0062      DO 8100 J=1,6
0063      8100 WRITE(8'J+33)(MOUT(I,J),I=1,10)
0064      NRCNO=34
0065      NOREC=6
0066      RETURN
0067      500 ICON(1)=ICON(1)+ISHFT(1,8)
0068      ICON(2)=0
0069      ICON(3)=IH51
0070      ICON(4)=1
0071      ICON(5)=IFS+2
0072      ICON(6)=ST(IND,6)
0073      ICON(7)=ICODE(3)
0074      ICON(8)=1
0075      ICON(9)=LEOF
0076      ICFLG=1
0077      NOREC=0
0078      ST(IND,1)=4011
0079      RETURN
0080      29 IADD=IAND(LSK,ICODE(4))
0081      IADD=IADD-48
0082      IFS=IFAC(IND)
0083      IF (IADD.EQ. 2) GOTO 961
C      ADD A RECORD
0085      DO 930 J=1,2
0086      930 READ(8'133+J)(MOUT(I,J),I=1,10)
0087      DO 935 J=3,5
0088      K=J+178+3*(IFS-1)
0089      935 READ(8'K)(MOUT(I,J),I=1,10)
0090      DO 940 J=6,9
0091      940 READ(8'J+164)(MOUT(I,J),I=1,10)
0092      IF (NOCHARKEY(IFS).EQ. 2) MOUT(3,6)=Q2Q
0094      IF (NOCHARKEY(IFS).EQ. 4) MOUT(3,6)=Q4Q
0096      MOUT(4,7)=KEYTYPEFM(IFS)
0097      DO 990 J=1,9
0098      990 WRITE(8'J+33)(MOUT(I,J),I=1,10)
0099      NRCNO=34
0100      NOREC=9
0101      ST(IND,1)=4010
0102      RETURN
C      DO NOT ADD A RECORD
0103      961 NRCNO=174
0104      NOREC=6
C      RECORD UNLOCK SHOULD OCCUR HERE
0105      ST(IND,1)=4014
0106      RETURN
0107      30 IFS=IFAC(IND)
0108      LU=IFS+2
0109      DO 300 J=1,40
0110      300 LINE(J)=ICODE(J+3)
0111      DO 310 I=1,10
```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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P4001.OBJ=P4001.FOR/NOSN/LI:1

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```

0112 310 OFIL(I,1)=IFAR(I)
      C ADD A NEW RECORD
0113 DO 1050 I=1,10
0114 DO 1050 J=2,3
0115 1050 OFIL(I,J)=ADE
0116 READ(2'IFS,ERR=1415)(DI(I),I=1,100)
0117 DO 1055 K=1,99
0118 ST(IND,7)=K
0119 IF (DI(K) .EQ. 0) GOTO 1060
0121 1055 CONTINUE
0122 1060 DI(ST(IND,7))=ST(IND,6)
0123 DI(ST(IND,7)+1)=0
0124 WRITE(LU'ST(IND,7),ERR=1415)((OFIL(I,J),I=1,10),J=1,3)
0125 WRITE(2'IFS,ERR=1415)(DI(I),I=1,100)
0126 NRCNO=174
0127 NOREC=6
0128 ST(IND,1)=4014
0129 ICON(1)=ICON(1)+ISHFT(1,8)
0130 ICON(2)=0
0131 ICON(3)=IHS1
0132 ICON(4)=3
0133 ICON(5)=IFS+2
0134 ICON(6)=ST(IND,6)
0135 ICON(7)=LEOF
0136 ICFLG=1
0137 RETURN
0138 31 IUPDEL=IAND(LSK,ICODE(4))
0139 IUPDEL=IUPDEL-48
0140 IFS=IFAC(IND)
0141 ST(IND,1)=4012
0142 IF (IUPDEL .EQ. 2) GOTO 1161
      C UPDATE RECORD
0144 NRCNO=162
0145 NOREC=3
0146 RETURN
      C DELETE RECORD
0147 1161 CONTINUE
0148 READ(2'IFS,ERR=1415)(DI(I),I=1,100)
0149 IF (DI(ST(IND,7)+1) .EQ. 0) DI(ST(IND,7))=0
0151 IF (DI(ST(IND,7)+1) .NE. 0) DI(ST(IND,7))=ISPC
0153 WRITE(2'IFS,ERR=1415)(DI(I),I=1,100)
0154 NRCNO=174
0155 NOREC=6
0156 ST(IND,1)=4014
0157 ICON(1)=ICON(1)+ISHFT(1,8)
0158 ICON(2)=0
0159 ICON(3)=IHS1
0160 ICON(4)=4
0161 ICON(5)=IFS+2
0162 ICON(6)=ST(IND,6)
0163 ICON(7)=LEOF
0164 ICFLG=1
0165 RETURN
0166 32 DO 400 J=1,40
0167 400 LINE(J)=ICODE(J+3)
0168 DO 410 I=1,10

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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P4001.0BJ=P4001.FOR/NOSN/LI:1

```
0169      410 OFIL(I,1)=IFAR(I)
0170          IFS=IFAC(IND)
0171          READ(2,IFS,ERR=1415)(DI(I),I=1,100)
0172          DO 1500 K=1,99
0173              ST(IND,7)=K
0174              IF (ST(IND,6) .EQ. DI(K)) GOTO 1510
0176              IF (ST(IND,6) .EQ. -DI(K)) GOTO 510
0178      1500 IF (DI(K) .EQ. 0) GOTO 530
0180      1510 LU=IFS+2
0181          DO 1250 I=1,10
0182          DO 1250 J=2,3
0183      1250 OFIL(I,J)=UPD
0184          WRITE(LU,ST(IND,7),ERR=1415)((OFIL(I,J),I=1,10),J=1,3)
0185      530  NRCNO=174
0186          NOREC=6
0187          ST(IND,1)=4014
0188          RETURN
0189      510  ICON(1)=ICON(1)+ISHFT(1,8)
0190          ICON(2)=0
0191          ICON(3)=IH51
0192          ICON(4)=2
0193          ICON(5)=IFS+2
0194          ICON(6)=ST(IND,6)
0195          DO 520 J=1,40
0196      520  ICON(J+6)=LINE(J)
0197          ICON(47)=LEDP
0198          ICFLG=1
0199          GOTO 530
0200      34  I=IAND(LSK,ICODE(4))
0201          I=I-48
C          MODE 4 SWITCH OUT
0202          IF (I .EQ. 1) GOTO 1470
0204          IF (I .EQ. 2) GOTO 144
0206          IF (I .EQ. 3) GOTO 146
0208          IF (I .EQ. 4) GOTO 148
0210          IF (I .EQ. 5) GOTO 149
0212      1415 NRCNO=11
0213          NOREC=1
0214          RETURN
0215      1470 NRCNO=137
0216          NOREC=3
0217          ST(IND,1)=4002
0218          RETURN
0219      144  NRCNO=127
0220          NOREC=6
0221          ST(IND,1)=4000
0222          RETURN
0223      146  NRCNO=5
0224          NOREC=6
0225          ST(IND,1)=0004
0226          RETURN
0227      148  NRCNO=21
0228          NOREC=1
0229          ST(IND,1)=9999
0230          RETURN
0231      149  LU=IFAC(IND)+2
```

FORTTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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P4001.OBJ=P4001.FOR/NOSN/LI:1

```

0232      IFS=IFAC(IND)
0233      READ(2'IFS,ERR=1415)(DI(I),I=1,100)
0234      DO 1520 K=1,99
0235      ST(IND,7)=K
0236      IF (ST(IND,6) .EQ. DI(K)) GOTO 1530
0238      IF (ST(IND,6) .EQ. -DI(K)) GOTO 540
0240      1520 IF (DI(K) .EQ. 0) GOTO 550
0242      1530 READ(LU'ST(IND,7),ERR=1415)((OFIL(I,J),I=1,10),J=1,3)
0243      DO 150 J=1,3
0244      DO 150 I=1,10
0245      150 MOUT(I,J)=OFIL(I,J)
0246      MOUT(1,5)=XMT
0247      DO 151 J=1,5
0248      151 WRITE(8'J+33)(MOUT(I,J),I=1,10)
0249      550 NRCNO=34
0250      NOREC=5
0251      ST(IND,1)=4006
0252      RETURN
0253      540 ICON(1)=ICON(1)+ISHFT(1,8)
0254      ICON(2)=0
0255      ICON(3)=IH51
0256      ICON(4)=1
0257      ICON(5)=IFS+2
0258      ICON(6)=ST(IND,6)
0259      ICON(7)=ICODE(3)
0260      ICON(8)=2
0261      ICON(9)=LEOF
0262      ICFLG=1
0263      NOREC=0
0264      ST(IND,1)=4006
0265      RETURN
0266      END

```

FORTTRAN IV DIAGNOSTICS

[WARNING] MSG #092 VARIABLE "NOCHAR" NAME EXCEEDS 6 CHARACTERS
[WARNING] MSG #092 VARIABLE "KEYTYP" NAME EXCEEDS 6 CHARACTERS

FOR -- [P4001] ERRORS: 0, WARNINGS: 2-
>

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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P40011.OBJ=P40011.FOR/NOSN/LI:1

```

0001      SUBROUTINE P4001
          C
          C
          C      FILE ACCESS MODE OF OPERATION
          C
0002      REAL*8 MOUT,Q2Q,Q4Q,KEYTYPEFM,XMT,OFIL,
          1      ST1,STD,ADE,UPD,NDI,LID,TAB,NWD
0003      INTEGER ST,DI
0004      DIMENSION OFIL(10,3),DI(100)
0005      COMMON NDI,LID,TAB,NWD,ST(3,9),IND
0006      COMMON /DSK/ I1,I2,I3,I4,I5,I6,I16
0007      COMMON /U000/ MOUT(10,11),NRCNO,NOREC
0008      COMMON /MD04/ NOCHARKEY(10),KEYTYPEFM(10)
0009      COMMON /F01/IFAC(3)
0010      COMMON /LOOP/ICODE(128),MSK,LSK
0011      COMMON /CFAC/ICON(128),ICFLG
0012      REAL*8 IFAR
0013      DIMENSION LINE(40),IFAR(10)
0014      EQUIVALENCE(LINE,IFAR)
0015      DATA Q2Q,Q4Q/' 2      ',' 4      '/
0016      DATA XMT,ST1,STD/
          1'PRS XMIT','ST.      ','ST. DO Y'/
0017      DATA ADE/' ADDED      '/
0018      DATA UPD/'UPDATED      '/
0019      DATA ISPC/'120240/
0020      DATA IH51,LEOP,KYMSK/'405','177777','77577/
0021      IF (ST(IND,1) .EQ. 4008) GOTO 28
0023      IF (ST(IND,1) .EQ. 4009) GOTO 29
0025      IF (ST(IND,1) .EQ. 4010) GOTO 30
0027      IF (ST(IND,1) .EQ. 4011) GOTO 31
0029      IF (ST(IND,1) .EQ. 4012) GOTO 32
0031      IF (ST(IND,1) .EQ. 4014) GOTO 34
0033      28 ST(IND,6)=IAND(KYMSK,ICODE(4))
0034      IFS=IFAC(IND)
          C      FOR RECORD MODIFICATION.
          C      RECORD LOCK OCCURS HERE
0035      READ(8'159)(MOUT(I,1),I=1,10)
0036      READ(2'IFS,ERR=1415)(DI(I),I=1,100)
0037      DO 850 K=1,99
0038      ST(IND,7)=K
0039      IF (ST(IND,6) .EQ. DI(K)) GOTO 864
0041      IF (ST(IND,6) .EQ. -DI(K)) GOTO 500
0043      850 IF (DI(K) .EQ. 0) GOTO 860
          C      RECORD DOES NOT EXIST
0045      860 CONTINUE
0046      DO 886 J=3,6
0047      886 READ(8'J+163)(MOUT(I,J),I=1,10)
0048      DO 890 J=1,6
0049      890 WRITE(8'33+J)(MOUT(I,J),I=1,10)
0050      NRCNO=34
0051      NOREC=6
0052      ST(IND,1)=4009
0053      RETURN
          C      RECORD EXISTS
0054      864 ST(IND,1)=4011
0055      LU=IFS+2

```

FORTTRAN IV V01B-02
CORE=08K, UIC=L20,20J

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P40011.OBJ=P40011.FOR/NOSN/LI:1

```

0056      READ(LU'ST(IND,7),ERR=1415)((OFIL(I,J),I=1,10),J=1,3)
0057      DO 883 J=1,3
0058      DO 883 I=1,10
0059      883 MOUT(I,J)=OFIL(I,J)
0060      DO 884 J=4,6
0061      884 READ(8'J+156)(MOUT(I,J),I=1,10)
0062      DO 8100 J=1,6
0063      8100 WRITE(8'J+33)(MOUT(I,J),I=1,10)
0064      NRCNO=34
0065      NOREC=6
0066      RETURN
0067      500 ICON(1)=ICON(1)+ISHFT(1,8)
0068      ICON(2)=0
0069      ICON(3)=IH51
0070      ICON(4)=1
0071      ICON(5)=IFS+2
0072      ICON(6)=ST(IND,6)
0073      ICON(7)=ICODE(3)
0074      ICON(8)=1
0075      ICON(9)=LEQP
0076      ICFLG=1
0077      NOREC=0
0078      ST(IND,1)=4011
0079      RETURN
0080      29 IADD=IAND(LSK,ICODE(4))
0081      IADD=IADD-48
0082      IFS=IFAC(IND)
0083      IF (IADD .EQ. 2) GOTO 961
C      ADD A RECORD
0085      DO 930 J=1,2
0086      930 READ(8'133+J)(MOUT(I,J),I=1,10)
0087      DO 935 J=3,5
0088      K=J+178+3*(IFS-1)
0089      935 READ(8'K)(MOUT(I,J),I=1,10)
0090      DO 940 J=6,9
0091      940 READ(8'J+164)(MOUT(I,J),I=1,10)
0092      IF (NOCHARKEY(IFS) .EQ. 2) MOUT(3,6)=Q2Q
0094      IF (NOCHARKEY(IFS) .EQ. 4) MOUT(3,6)=Q4Q
0096      MOUT(4,7)=KEYTYPEFM(IFS)
0097      DO 990 J=1,9
0098      990 WRITE(8'J+33)(MOUT(I,J),I=1,10)
0099      NRCNO=34
0100      NOREC=9
0101      ST(IND,1)=4010
0102      RETURN
C      DO NOT ADD A RECORD
0103      961 NRCNO=174
0104      NOREC=6
C      RECORD UNLOCK SHOULD OCCUR HERE
0105      ST(IND,1)=4014
0106      RETURN
0107      30 IFS=IFAC(IND)
0108      LU=IFS+2
0109      DO 300 J=1,40
0110      300 LINE(J)=ICODE(J+3)
0111      DO 310 I=1,10

```

FORTRAN IV V01B-02
CORE=08K, UIC=L20,20J

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P40011.OBJ=P40011.FOR/N06N/LI:1

```
0112   310 OFIL(I,1)=IFAR(I)
      C   ADD A NEW RECORD
0113       DO 1050 I=1,10
0114       DO 1050 J=2,3
0115   1050 OFIL(I,J)=ADE
0116       READ(2'IFS,ERR=1415)(DI(I),I=1,100)
0117       DO 1055 K=1,99
0118       ST(IND,7)=K
0119       IF (DI(K) .EQ. 0) GOTO 1060
0121   1055 CONTINUE
0122   1060 DI(ST(IND,7))=ST(IND,6)
0123       DI(ST(IND,7)+1)=0
0124       WRITE(LU'ST(IND,7),ERR=1415)((OFIL(I,J),I=1,10),J=1,3)
0125       WRITE(2'IFS,ERR=1415)(DI(I),I=1,100)
0126       NRCNO=174
0127       NOREC=6
0128       ST(IND,1)=4014
0129       ICON(1)=ICON(1)+ISHFT(1,8)
0130       ICON(2)=0
0131       ICON(3)=IH51
0132       ICON(4)=3
0133       ICON(5)=IFS+2
0134       ICON(6)=ST(IND,6)
0135       ICON(7)=LEOP
0136       ICFLG=1
0137       RETURN
0138   31 IUPDEL=IAND(LSK,ICODE(4))
0139       IUPDEL=IUPDEL-48
0140       IFS=IFAC(IND)
0141       ST(IND,1)=4012
0142       IF (IUPDEL .EQ. 2) GOTO 1161
      C   UPDATE RECORD
0144       NRCNO=162
0145       NOREC=3
0146       RETURN
      C   DELETE RECORD
0147   1161 CONTINUE
0148       READ(2'IFS,ERR=1415)(DI(I),I=1,100)
0149       IF (DI(ST(IND,7)+1) .EQ. 0) DI(ST(IND,7))=0
0151       IF (DI(ST(IND,7)+1) .NE. 0) DI(ST(IND,7))=ISPC
0153       WRITE(2'IFS,ERR=1415)(DI(I),I=1,100)
0154       NRCNO=174
0155       NOREC=6
0156       ST(IND,1)=4014
0157       ICON(1)=ICON(1)+ISHFT(1,8)
0158       ICON(2)=0
0159       ICON(3)=IH51
0160       ICON(4)=4
0161       ICON(5)=IFS+2
0162       ICON(6)=ST(IND,6)
0163       ICON(7)=LEOP
0164       ICFLG=1
0165       RETURN
0166   32 DO 400 J=1,40
0167   400 LINE(J)=ICODE(J+3)
0168       DO 410 I=1,10
```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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P40011.OBJ=P40011.FOR/NOSN/LI:1

```

0169      410 OFIL(I,1)=IFAR(I)
0170          IFS=IFAC(IND)
0171          READ(2'IFS,ERR=1415)(DI(I),I=1,100)
0172          DO 1500 K=1,99
0173              ST(IND,7)=K
0174              IF (ST(IND,6) .EQ. DI(K)) GOTO 1510
0176              IF (ST(IND,6) .EQ. -DI(K)) GOTO 510
0178      1500 IF (DI(K) .EQ. 0) GOTO 530
0180      1510 LU=IFS+2
0181          DO 1250 I=1,10
0182          DO 1250 J=2,3
0183      1250 OFIL(I,J)=UPD
0184          WRITE(LU'ST(IND,7),ERR=1415)((OFIL(I,J),I=1,10),J=1,3)
0185      530  NRCNO=174
0186          NOREC=6
0187          ST(IND,1)=4014
0188          RETURN
0189      510  ICON(1)=ICON(1)+ISHFT(1,8)
0190          ICON(2)=0
0191          ICON(3)=IH51
0192          ICON(4)=2
0193          ICON(5)=IFS+2
0194          ICON(6)=ST(IND,6)
0195          DO 520 J=1,40
0196      520  ICON(J+6)=LINE(J)
0197          ICON(47)=LEDP
0198          ICFLG=1
0199          GOTO 530
0200      34  I=IAND(LSK,ICODE(4))
0201          I=I-48
0202      C    MODE 4 SWITCH OUT
0203          IF (I .EQ. 1) GOTO 1470
0204          IF (I .EQ. 2) GOTO 144
0206          IF (I .EQ. 3) GOTO 146
0208          IF (I .EQ. 4) GOTO 148
0210          IF (I .EQ. 5) GOTO 149
0212      1415 NRCNO=11
0213          NOREC=1
0214          RETURN
0215      1470 NRCNO=137
0216          NOREC=3
0217          ST(IND,1)=4002
0218          RETURN
0219      144  NRCNO=127
0220          NOREC=6
0221          ST(IND,1)=4000
0222          RETURN
0223      146  NRCNO=5
0224          NOREC=6
0225          ST(IND,1)=0004
0226          RETURN
0227      148  NRCNO=21
0228          NOREC=1
0229          ST(IND,1)=9999
0230          RETURN
0231      149  LU=IFAC(IND)+2

```

FORTRAN IV V01B-02
CORE=08K, UIC=C20,20J

FRI 18-MAR-77 19:22:21

PAGE 005

P40011.OBJ=P40011.FDR/NOSN/LI:1

```
0232      IFS=IFAC(IND)
0233      READ(2,IFS,ERR=1415)(DI(I),I=1,100)
0234      DO 1520 K=1,99
0235      ST(IND,7)=K
0236      IF (ST(IND,6) .EQ. DI(K)) GOTO 1530
0238      IF (ST(IND,6) .EQ. -DI(K)) GOTO 540
0240 1520 IF (DI(K) .EQ. 0) GOTO 550
0242 1530 READ(LU,ST(IND,7),ERR=1415)((OFIL(I,J),I=1,10),J=1,3)
0243      DO 150 J=1,3
0244      DO 150 I=1,10
0245 150 MOUT(I,J)=OFIL(I,J)
0246      MOUT(1,5)=XMT
0247      DO 151 J=1,5
0248 151 WRITE(8,J+33)(MOUT(I,J),I=1,10)
0249 550 NRCND=34
0250      NOREC=5
0251      ST(IND,1)=4006
0252      RETURN
0253 540 ICON(1)=ICON(1)+ISHFT(1,8)
0254      ICON(2)=0
0255      ICON(3)=IH51
0256      ICON(4)=1
0257      ICON(5)=IFS+2
0258      ICON(6)=ST(IND,6)
0259      ICON(7)=ICODE(3)
0260      ICON(8)=2
0261      ICON(9)=LEDP
0262      ICFLG=1
0263      NOREC=0
0264      ST(IND,1)=4006
0265      RETURN
0266      END
```

FORTRAN IV DIAGNOSTICS

```
[ WARNING ] MSG #092  VARIABLE "NOCHAR" NAME EXCEEDS 6 CHARACTERS
[ WARNING ] MSG #092  VARIABLE "KEYTYP" NAME EXCEEDS 6 CHARACTERS
```

```
FOR -- [P4001 ] ERRORS: 0, WARNINGS: 2
>
```


P5000

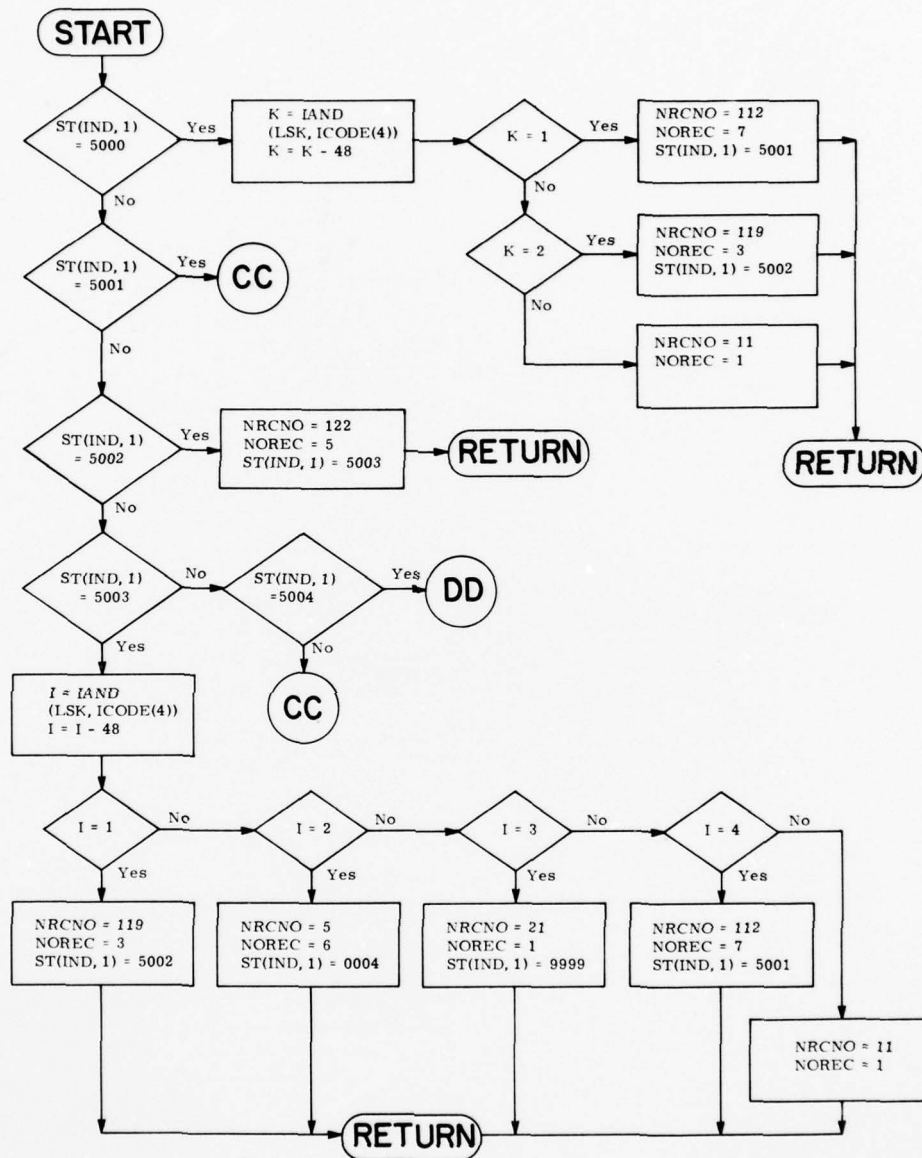


Figure 1-16. P5000

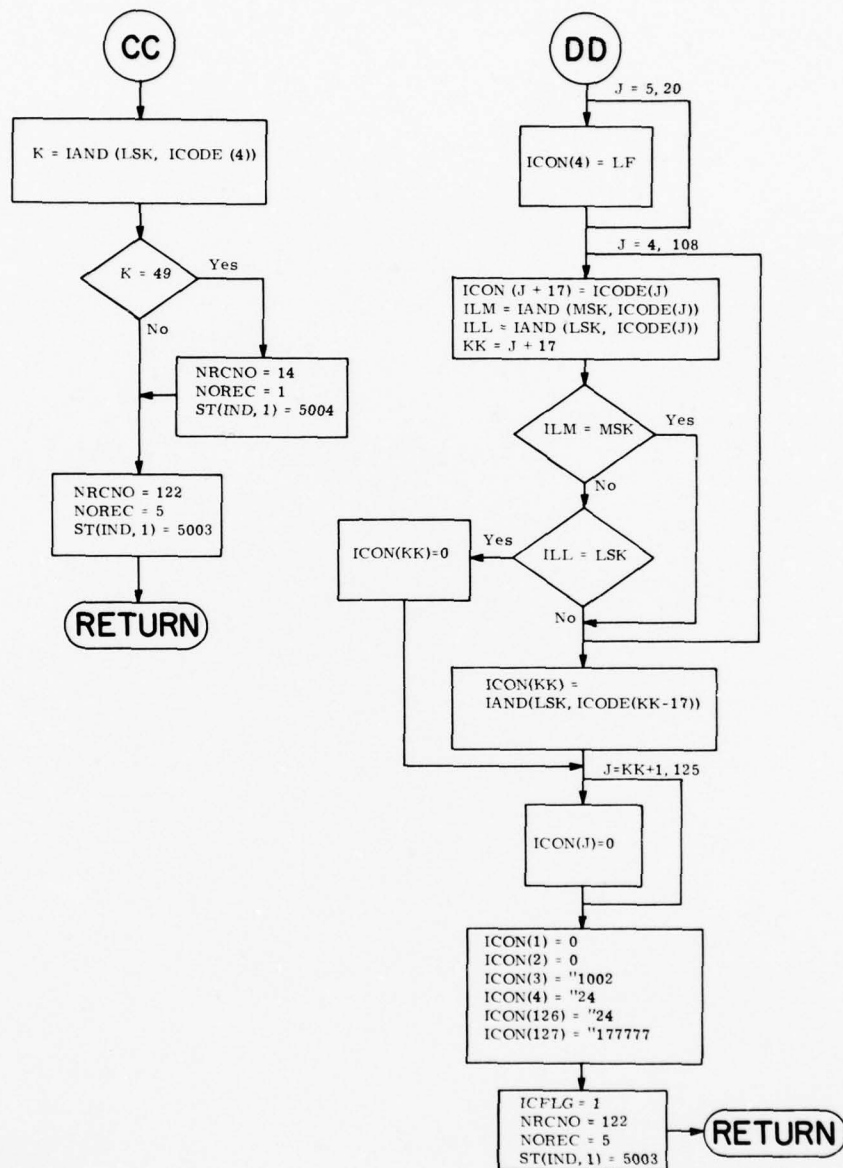


Figure 1-16. (Cont.)

FORTTRAN IV V01B-02
CORE=08K, UIC=[20,20]

TUE 01-MAR-77 15:55:40

PAGE 001

P5000.OBJ=P5000.FOR/NOSN/LI:1

```

0001      SUBROUTINE P5000
      C
0002      REAL*8 MOUT,NDI,LID,TAB,NWD
0003      INTEGER ST
0004      COMMON NDI,LID,TAB,NWD,ST(3,9),IND
0005      COMMON /U000/ MOUT(10,11),NRCNO,NOREC
0006      COMMON /CFAC/ICON(128),ICFLG
0007      DATA LF,LHOME,LEOP,IBRCST,IHB/'12','24','177777','1002','2577/
0008      COMMON /LOOP/ICODE(128),MSK,LSK
      C
      C
      C      CARD FORMAT MODE OF OPERATION
0009      IF(ST(IND,1).EQ.5000)GOTO 85
0011      IF (ST(IND,1).EQ.5001) GOTO 21
0013      IF (ST(IND,1).EQ.5002) GOTO 22
0015      IF (ST(IND,1).EQ.5003)GOTO 23
0017      IF (ST(IND,1).EQ.5004) GOTO 24
0019      21 K=IAND(LSK,ICODE(4))
0020      IF (K.EQ.49) GOTO 100
0022      NRCNO=122
0023      NOREC=5
0024      ST(IND,1)=5003
0025      RETURN
0026      100 NRCNO=14
0027      NOREC=1
0028      ST(IND,1)=5004
0029      RETURN
0030      24 DO 110 J=5,20
0031      110 ICON(J)=LF
0032      DO 120 J=4,108
0033      ICON(J+17)=ICODE(J)
0034      ILM=IAND(MSK,ICODE(J))
0035      ILL=IAND(LSK,ICODE(J))
0036      KK=J+17
0037      IF (ILM.EQ.MSK) GOTO 130
0039      120 IF (ILL.EQ.LSK) GOTO 140
0041      130 ICON(KK)=IAND(LSK,ICODE(KK-17))
0042      GOTO 150
0043      140 ICON(KK)=0
0044      150 DO 160 J=KK+1,125
0045      160 ICON(J)=0
0046      ICON(1)=0
0047      ICON(2)=IBRCST
0048      ICON(3)=IHB
0049      ICON(4)=LHOME
0050      ICON(126)=LHOME
0051      ICON(127)=LEOP
0052      ICFLG=1
0053      NRCNO=122
0054      NOREC=5
0055      ST(IND,1)=5003
0056      RETURN
0057      22 NRCNO=122
0058      NOREC=5
0059      ST(IND,1)=5003
0060      RETURN

```

FORTRAN IV V01B-02
CORE=08K, UIC=L20,20J

TUE 01-MAR-77 15:55:40

PAGE 002

P5000.OBJ=F5000.FOR/NOSN/LI:1

```
0061      23 I=IAND(LSK,ICODE(4))
0062          I=I-48
0063          IF (I .EQ. 1) GOTO 830
0065          IF (I .EQ. 2) GOTO 6
0067          IF (I .EQ. 3) GOTO 8
0069          IF (I .EQ. 4) GOTO 820
0071          NRCNO=11
0072          NOREC=1
0073          RETURN
0074      830 NRCNO=119
0075          NOREC=3
0076          ST(IND,1)=5002
0077          RETURN
0078      6 NRCNO=5
0079          NOREC=6
0080          ST(IND,1)=0004
0081          RETURN
0082      8 NRCNO=21
0083          NOREC=1
0084          ST(IND,1)=9999
0085          RETURN
0086      820 NRCNO=112
0087          NOREC=7
0088          ST(IND,1)=5001
0089          RETURN
0090      85 K=IAND(LSK,ICODE(4))
0091          K=K-48
0092          IF (K .EQ. 1) GOTO 82
0094          IF (K .EQ. 2) GOTO 83
0096      20 NRCNO=11
0097          NOREC=1
0098          RETURN
0099      82 NRCNO=112
0100          NOREC=7
0101          ST(IND,1)=5001
0102          RETURN
0103      83 NRCNO=119
0104          NOREC=3
0105          ST(IND,1)=5002
0106          RETURN
0107          END
```

FORTRAN IV DIAGNOSTICS

[WARNING] MSG #094 NON-STANDARD STATEMENT ORDERING

FOR -- [P5000]-ERRORS: 0, WARNINGS: 1
>

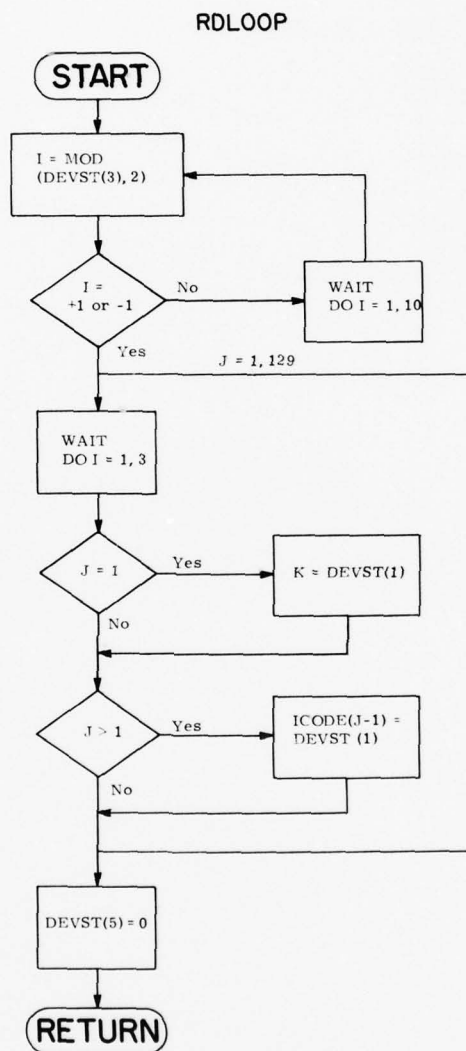


Figure 1-17. RDLOOP

AD-A063 407

BURROUGHS CORP PAOLI PA FEDERAL AND SPECIAL SYSTEMS GROUP F/G 17/2
EXPLORATORY SYSTEMS CONTROL MODEL (ESM). BOOK 1. FORTRAN. SOFTW--ETC(U)
APR 77 DCA100-75-C-0054

UNCLASSIFIED

66143-3

NL

3 OF 3

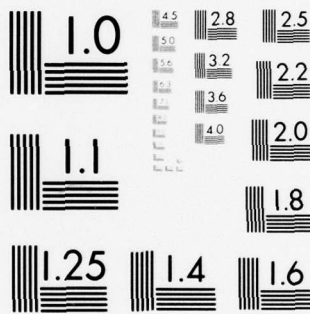
AD
A063407



END
DATE
FILMED

3-79

DDC



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

TUE 01-MAR-77 16:16:24

PAGE 001

RDLOOP.OBJ=RDLOOP.FOR/NOSN/LI:1

```
0001      SUBROUTINE RDLOOP
0002      INTEGER DEVST(6)
0003      COMMON /M1710/DEVST
0004      COMMON /LOOP/ ICODE(128),MSK,LSK
0005      90 I=MOD(DEVST(3),2)
0006      IF (I .EQ. 1) GOTO 120
0008      IF (I .EQ. -1) GOTO 120
0010      DO 110 I=1,10
0011      110 CONTINUE
0012      GOTO 90
0013      120 DO 130 J=1,129
0014      DO 140 I=1,3
0015      140 CONTINUE
0016      IF (J .EQ. 1) K=DEVST(1)
0018      IF (J .GT. 1) ICODE(J-1)=DEVST(1)
0020      130 CONTINUE
0021      DEVST(5)=0
0022      RETURN
0023      END
```

>

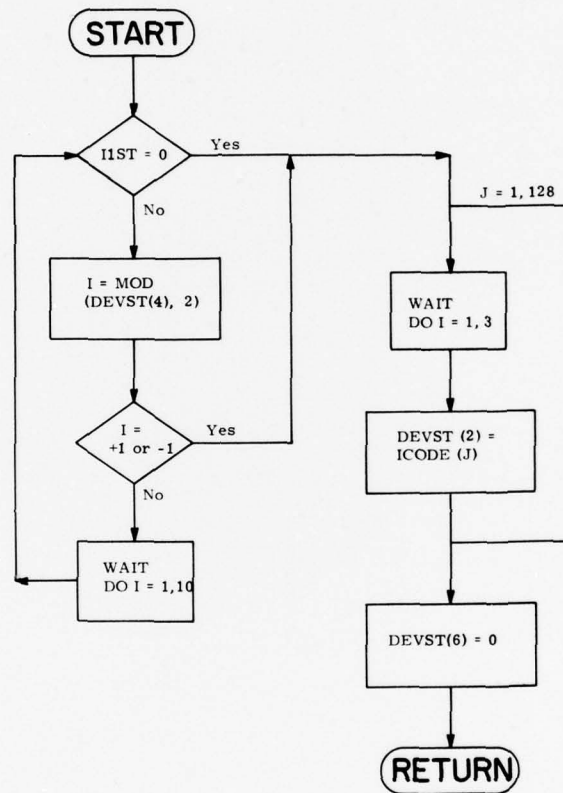
WRLOOP
(I1ST)

Figure 1-18. WRLOOP

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

TUE 01-MAR-77 16:17:24

PAGE 001

WRLOOP.OBJ=WRLOOP.FOR/NOSN/LI:1

```
0001      SUBROUTINE WRLOOP(I1ST)
0002      INTEGER DEVST(6)
0003      COMMON /M1710/ DEVST
0004      COMMON /LOOP/ICODE(128),MSK,LSK
0005      IF (I1ST .EQ. 0) GOTO 40
0007      50 I=MOD(DEVST(4),2)
0008      IF (I .EQ. 1) GOTO 40
0010      IF (I .EQ. -1) GOTO 40
0012      DO 60 I=1,10
0013      60 CONTINUE
0014      GOTO 50
0015      40 DO 70 J=1,128
0016      DO 80 I=1,3
0017      80 CONTINUE
0018      70 DEVST(2)=ICODE(J)
0019      DEVST(6)=0
0020      RETURN
0021      END
```

> 31

HST

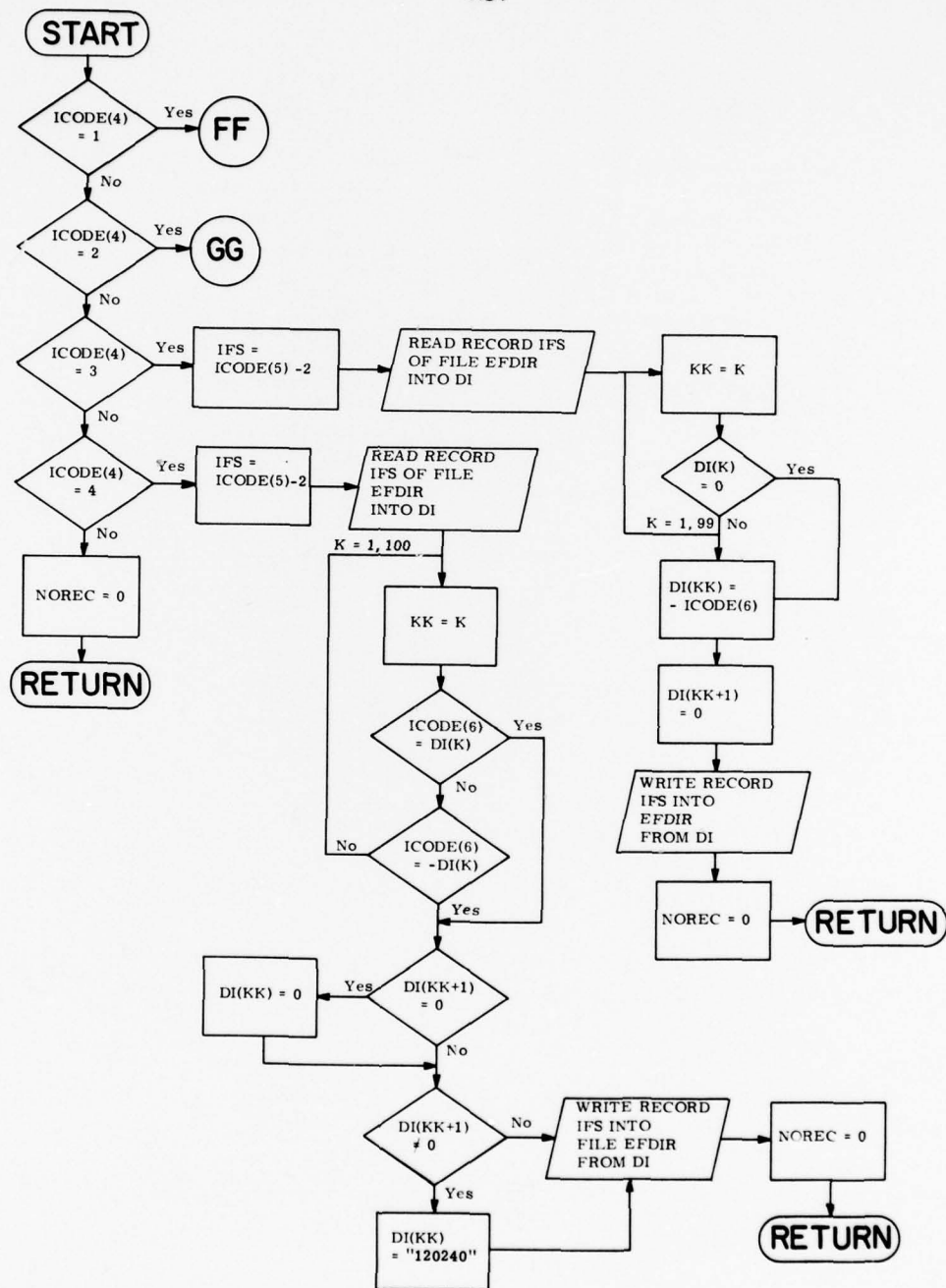


Figure 1-19. HST

HST (cont.)

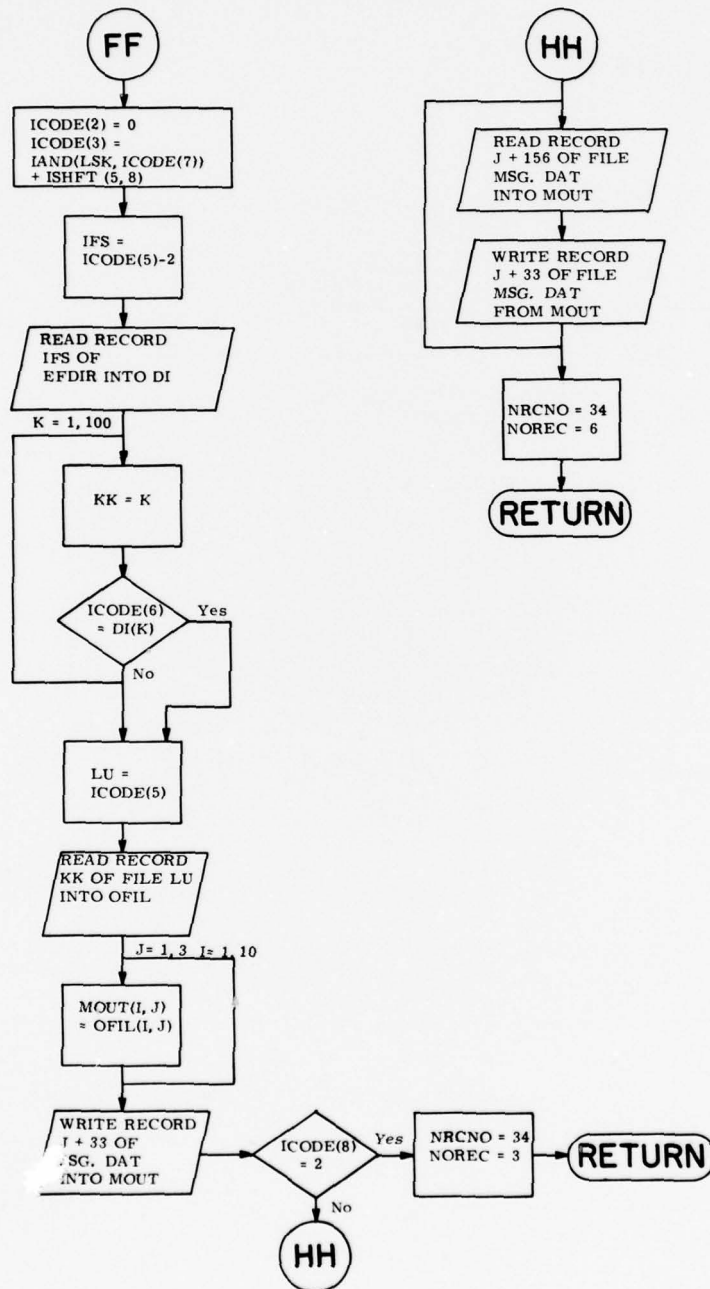


Figure 1-19. (Cont.)

HST (cont.)

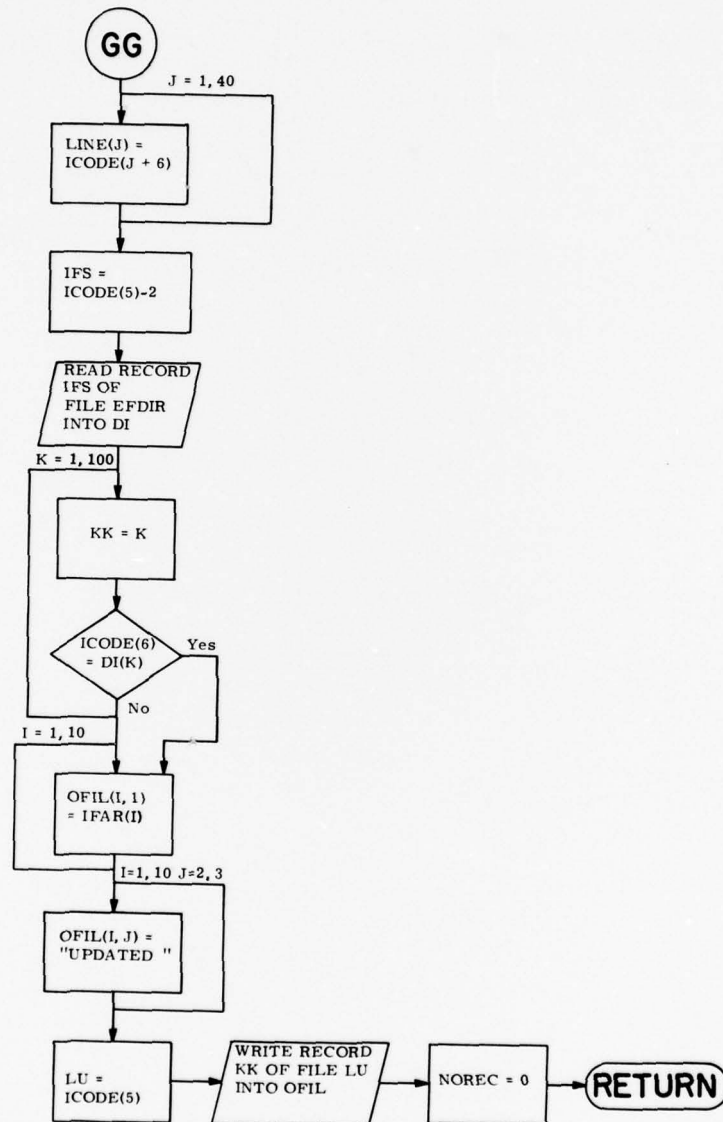


Figure 1-19. (Cont.)

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

FRI 18-MAR-77 19:27:27

PAGE 001

HST.OBJ=HST.FOR/NDSN/LI:1

```

0001      SUBROUTINE HST
0002      REAL*8 MOUT,OFIL,XMT,IFAR,UPD
0003      INTEGER ST,DI
0004      COMMON /LOOP/ICODE(128),MSK,L$K
0005      COMMON /U0000/MOUT(10,11),NRCNO,NOREC
0006      COMMON /DSK/I1,I2,I3,I4,I5,I6,I16
0007      DIMENSION OFIL(10,3),DI(100)
0008      DIMENSION LINE(40),IFAR(10)
0009      EQUIVALENCE (LINE,IFAR)
0010      DATA XMT,UPD/'PRS XMIT','UPDATED '/
0011      DATA ISPC/'120240/'
0012      IF (ICODE(4) .EQ. 1) GOTO 21
0014      IF (ICODE(4) .EQ. 2) GOTO 22
0016      IF (ICODE(4) .EQ. 3) GOTO 23
0018      IF (ICODE(4) .EQ. 4) GOTO 24
0020      NOREC=0
0021      RETURN
0022  21 ICODE(2)=0
0023      ICODE(3)=IAND(L$K,ICODE(7))+ISHFT(5,8)
0024      IFS=ICODE(5)-2
0025      READ(2,IFS,ERR=99)(DI(I),I=1,100)
0026      DO 550 K=1,100
0027      KK=K
0028      IF (ICODE(6) .EQ. DI(K)) GOTO 560
0030  550 CONTINUE
0031  560 LU=ICODE(5)
0032      READ(LU,KK,ERR=99)((OFIL(I,J),I=1,10),J=1,3)
0033      DO 582 J=1,3
0034      DO 582 I=1,10
0035  582 MOUT(I,J)=OFIL(I,J)
0036      DO 682 J=1,3
0037  682 WRITE(8,J+33)(MOUT(I,J),I=1,10)
0038      IF (ICODE(8) .EQ. 2) GOTO 30
0040      DO 650 J=4,6
0041      READ(8,J+156)(MOUT(I,J),I=1,10)
0042  650 WRITE(8,J+33)(MOUT(I,J),I=1,10)
0043      NRCNO=34
0044      NOREC=6
0045      RETURN
0046  30 NRCNO=34
0047      NOREC=3
0048      RETURN
0049  99 NRCNO=11
0050      NOREC=1
0051      RETURN
0052  22 DO 400 J=1,40
0053  400 LINE(J)=ICODE(J+6)
0054      IFS=ICODE(5)-2
0055      READ(2,IFS,ERR=99)(DI(I),I=1,100)
0056      DO 401 K=1,100
0057      KK=K
0058      IF (ICODE(6) .EQ. DI(K)) GOTO 402
0060  401 CONTINUE
0061  402 DO 410 I=1,10
0062  410 OFIL(I,1)=IFAR(I)
0063      DO 1250 I=1,10.

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

FRI 18-MAR-77 19:27:27

PAGE 002

HST.OBJ=HST.FOR/NOSH/LI.1

```
0064      DO 1250 J=2,3
0065 1250  OFIL(I,J)=UPD
0066      LU=ICODE(5)
0067      WRITE(LU, KK, ERR=99)((OFIL(I,J), I=1,10), J=1,3)
0068      NOREC=0
0069      RETURN
0070      23 IFS=ICODE(5)-2
0071      READ(2, IFS, ERR=99)(DI(I), I=1,100)
0072      DO 1055 K=1,99
0073      KK=K
0074      IF (DI(K) .EQ. 0) GOTO 1060
0076 1055  CONTINUE
0077 1060  DI(KK)=-ICODE(6)
0078      DI(KK+1)=0
0079      WRITE(2, IFS, ERR=99)(DI(I), I=1,100)
0080      NOREC=0
0081      RETURN
0082      24 IFS=ICODE(5)-2
0083      READ(2, IFS, ERR=99)(DI(I), I=1,100)
0084      DO 1070 K=1,100
0085      KK=K
0086      IF (ICODE(6) .EQ. DI(K)) GOTO 1075
0088      IF (ICODE(6) .EQ. -DI(K)) GOTO 1075
0090 1070  CONTINUE
0091 1075  IF (DI(KK+1) .EQ. 0) DI(KK)=0
0093      IF (DI(KK+1) .NE. 0) DI(KK)=ISPC
0095      WRITE(2, IFS, ERR=99)(DI(I), I=1,100)
0096      NOREC=0
0097      RETURN
0098      END
```

>

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

FRI 18-MAR-77 19:28:42

PAGE 001

HST1.OBJ=HST1.FOR/NOSN/LI:1

```
0001      SUBROUTINE HST
0002      REAL*8 MOUT,OFIL,XMT,IFAR,UPD
0003      INTEGER ST,DI
0004      COMMON /LOOP/ICODE(128),MSK,LSK
0005      COMMON /U000/MOUT(10,11),NRCNO,NOREC
0006      COMMON /DSK/I1,I2,I3,I4,I5,I6,I16
0007      DIMENSION OFIL(10,3),DI(100)
0008      DIMENSION LINE(40),IFAR(10)
0009      EQUIVALENCE (LINE,IFAR)
0010      DATA XMT,UPD/'FRS XMIT','UPDATED '/
0011      DATA ISPC/'120240/'
0012      IF (ICODE(4) .EQ. 1) GOTO 21
0014      IF (ICODE(4) .EQ. 2) GOTO 22
0016      IF (ICODE(4) .EQ. 3) GOTO 23
0018      IF (ICODE(4) .EQ. 4) GOTO 24
0020      NOREC=0
0021      RETURN
0022      21 ICODE(2)=0
0023          ICODE(3)=IAND(LSK,ICODE(7))+ISHFT(1,8)
0024          IFS=ICODE(5)-2
0025          READ(2'IFS,ERR=99)(DI(I),I=1,100)
0026          DO 550 K=1,100
0027              KK=K
0028              IF (ICODE(6) .EQ. DI(K)) GOTO 560
0030      550 CONTINUE
0031      560 LU=ICODE(5)
0032          READ(LU'KK,ERR=99)((OFIL(I,J),I=1,10),J=1,3)
0033          DO 582 J=1,3
0034              DO 582 I=1,10
0035      582 MOUT(I,J)=OFIL(I,J)
0036              DO 682 J=1,3
0037      682 WRITE(8'J+33)(MOUT(I,J),I=1,10)
0038              IF (ICODE(8) .EQ. 2) GOTO 30
0040              DO 650 J=4,6
0041      650 READ(8'J+156)(MOUT(I,J),I=1,10)
0042      650 WRITE(8'J+33)(MOUT(I,J),I=1,10)
0043          NRCNO=34
0044          NOREC=6
0045          RETURN
0046      30 NRCNO=34
0047          NOREC=3
0048          RETURN
0049      99 NRCNO=11
0050          NOREC=1
0051          RETURN
0052      22 DO 400 J=1,40
0053      400 LINE(J)=ICODE(J+6)
0054          IFS=ICODE(5)-2
0055          READ(2'IFS,ERR=99)(DI(I),I=1,100)
0056          DO 401 K=1,100
0057              KK=K
0058              IF (ICODE(6) .EQ. DI(K)) GOTO 402
0060      401 CONTINUE
0061      402 DO 410 I=1,10
0062      410 OFIL(I,1)=IFAR(I)
0063          DO 1250 I=1,10
```


FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]FRI 18-MAR-77 19:28:42 PAGE 002
HST1.OBJ=HST1.FOR/NOSN/LI:1

```
0064      DO 1250 J=2,3
0065 1250 OFIL(I,J)=UPD
0066      LU=ICODE(5)
0067      WRITE(LU'KK,ERR=99)((OFIL(I,J),I=1,10),J=1,3)
0068      NOREC=0
0069      RETURN
0070      23 IFS=ICODE(5)-2
0071      READ(2'IFS,ERR=99)(DI(I),I=1,100)
0072      DO 1055 K=1,99
0073      KK=K
0074      IF (DI(K) .EQ. 0) GOTO 1060
0076 1055 CONTINUE
0077 1060 DI(KK)=-ICODE(6)
0078      DI(KK+1)=0
0079      WRITE(2'IFS,ERR=99)(DI(I),I=1,100)
0080      NOREC=0
0081      RETURN
0082      24 IFS=ICODE(5)-2
0083      READ(2'IFS,ERR=99)(DI(I),I=1,100)
0084      DO 1070 K=1,100
0085      KK=K
0086      IF (ICODE(6) .EQ. DI(K)) GOTO 1075
0088      IF (ICODE(6) .EQ. -DI(K)) GOTO 1075
0090 1070 CONTINUE
0091 1075 IF (DI(KK+1) .EQ. 0) DI(KK)=0
0093      IF (DI(KK+1) .NE. 0) DI(KK)=ISPC
0095      WRITE(2'IFS,ERR=99)(DI(I),I=1,100)
0096      NOREC=0
0097      RETURN
0098      END
```

>

END MSG.DAT
 00080 LINES READ INJ
 CPAGE 03
 *BLOCK OFF
 *T

*LI

THIS IS THE ESM - (EXPLORATORY SYSCON MODEL)
 ENTER USERCODE PLEASE
 ENTER PASSWORD PLEASE
 YOU ARE NOW LOGGED IN - (TO LOGOUT, ENTER 'DS')
 PLEASE SELECT ONE MODE OF OPERATION

1. CRT TO CRT
2. SYSTEM INQUIRY
3. SYSTEM CONTROL
4. FILE ACCESS
5. CARD FORMAT

INVALID ENTRY - PLEASE TRY AGAIN (OR ENTER DS TO LOGOUT)
 ENTER DEST CRT NODE DESIGNATOR(ND) - 4 FOR LP#2, 8 FOR LP#3
 IF NOT KNOWN ENTER 'NDI'

PLEASE TYPE IN MESSAGE AND TRANSMIT
 PLEASE SELECT ONE MODE OF OPERATION

1. NEW MESSAGE TO SAME CRT
2. NEW MESSAGE TO ANOTHER CRT
3. LOGOUT
4. NEW MODE OF OPERATION.

020 NOT YET IMPLEMENTED-PLEASE RESELECT
 YOU ARE LOGGED OUT FROM ESM

PLEASE SELECT TYPE OF SYSTEM INFORMATION

1. NETWORK DEVICE INFORMATION
2. LID/FAD CONVERSION TABLE (LID'S 1-100)
3. LID/FAD CONVERSION TABLE (LID'S 101-254)
4. WORKPAGE PARAMETERS OF NODE.

PLEASE ENTER NODE DESIGNATOR (ND).

IF ND IS NOT KNOWN, ENTER NDI
 FOR NETWORK DEVICE INFORMATION.

PLEASE SELECT ONE OF THE FOLLOWING:

1. NEW SYSTEM INQUIRY.
2. LOGOUT.
3. ANOTHER MODE OF OPERATION.

MSG TO CRT ND= 8

PLEASE SELECT ONE MODE OF OPERATION

1. NEW MESSAGE TO SAME CRT
2. NEW MESSAGE TO ANOTHER CRT
3. LOGOUT
4. NEW MODE OF OPERATION.

GATE 2 2 1 6 1 3 10 2 1
 GATE 3 3 2 7 3 4 11 1 4

NOTE: NT IS NODE TYPE ND IS NODE DESIGNATOR, RDA IS FUNCTIONAL ADDRESS
 AND WTD IS WRITE TOKEN DESTINATION.
 PRESS 'T' KEY FOR NEXT INSTRUCTION.

LID/FAD CONVERSION TABLE

1	1	1	2	2	2	2	4	3	2	1
0										
0										
0										
0										
0	0	0	0	0	0	0				
0										
0										

```

0
0
0 0 0 0 0 0 0 0 0 0 0 0 0 1
      NODE WORKPAGE PARAMETERS
CRT  NODE HAS DESIGNATOR      8      RDA      4 IN LOOP      3
ALTERNATE GATEWAY FUNCTIONAL ADDRESSES . . . . 1, 2
MAXIMUM INPUT QUEUE SIZE (TO EXTERNAL) . . . . 8
MAXIMUM OUTPUT QUEUE SIZE (TO BITSTREAM) . . . . 1
MAXIMUM PACKET XMISSIONS BEFORE ERROR MESSAGE . . 8
TIMEOUT FOR WRITE TOKEN REGENERATION . . . . . 12
TIMEOUT FOR PACKET RETRANSMISSION . . . . . 41
NUMBER OF NODES IN SYSTEM . . . . . 11
NUMBER OF NODES IN LOOP . . . . . 4
PRESS 'T' KEY FOR NEXT INSTRUCTION
PLEASE SELECT TYPE OF SYSTEM PARAMETERS
TO BE CHANGED.
1. NETWORK DEVICE PARAMETERS.
2. LID/FAD CONVERSION TABLE (LID'S 1-100)
3. LID/FAD CONVERSION TABLE (LID'S 101-254)
4. WORKPAGE PARAMETERS. (NOT YET IMPLEMENTED IN CIE MEMORY)
PLEASE SELECT NODE DESIGNATOR (ND) & ENTER
IF ND IS NOT KNOWN, ENTER 'NDI' FOR DISPLAY.
PLEASE SELECT PARAMETER TO BE CHANGED, FOLLOWED
B: THE NEW VALUE. (FORMAT I1,I3,5X)
1. NODE DESIGNATOR -- NOT IMPLEMENTED
2. FUNCTIONAL ADDRESS.
3. WRITE TOKEN DESTINATION.
4. NO CHANGE.
PLEASE ENTER LID FOLLOWED BY NEW FAD (FORMAT I4,I4).
FOR TABLE DISPLAY ENTER 'LID'.
PLEASE ENTER LID FOLLOWED BY NEW FAD
(FORMAT I4,I4)
FOR TABLE PAGE DISPLAY, ENTER 'TAB'.
PLEASE ENTER ONE OF THE FOLLOWING FOLLOWED BY NEW
VALUE (FORMAT I1,A7). FOR NODE WKPG DISPLAY, ENTER 'NNWD'.
1. ALTERNATE GATEWAY FUNCTIONAL ADDRESS .
2. ALTERNATE GATEWAY FUNCTIONAL ADDRESS .
3. MAXIMUM INPUT QUEUE SIZE (EXTERNAL).
4. MAXIMUM OUTPUT QUEUE SIZE (BITSTREAM).
5. MAXIMUM PACKET XMISSIONS BEFORE ERROR MESSAGE.
6. TIMEOUT FOR WRITE TOKEN REGENERATION.
7. TIMEOUT FOR PACKET RETRANSMISSION.
8. NUMBER OF NODES IN SYSTEM.
9. NUMBER OF NODES IN LOOP.
100 PLEASE SELECT ONE OF THE FOLLOWING:
101 1. SYSTEM UPDATE OF CHANGE
102 2. LOOP UPDATE OF CHANGE.
103 3. NO ACTION.
PLEASE SELECT ONE OF THE FOLLOWING:
1. NEW SYSTEM CONTROL OF SAME TYPE
2. NEW SYSTEM CONTROL OF DIFFERENT TYPE
3. LOGOUT.
4. ANOTHER MODE OF OPERATION.
DO YOU WISH TO EXECUTE AN ESM
DEMONSTRATION PROGRAM?
1. YES
2. NO
PLEASE SELECT PROGRAM TO BE EXECUTED.
USE CRT AS AN I/O DEVICE FOR THE PROGRAM.
1. CRT BROADCAST.

```

2. RECORD MOVE.
3. INTERPROCESS COMMUNICATION.--ABORT USRLNG, RUN PROC

.....
.....

YOUR CRT WILL ACT AS A USER TERMINAL.
IT WILL ATTACH TO A HOST COMPUTER. PLEASE ADHERE
TO STANDARD MCR AND UTILITIES CONTROL FORMATS. PRESS XMIT

PLEASE SELECT ONE OF THE FOLLOWING:

1. NEW CARD FORMAT RUN.
2. NEW MODE OF OPERATION.
3. LOGOUT.

4. NEW DEMO PROGRAM.

PLEASE SELECT FILE TO BE ACCESSED: (ONLY #1-4 ON DISK)

- | | |
|-------------------------|--------------------------|
| 01. LOCATION FILE | 06. SUBSTANDARD CIRCUITS |
| 02. CIRCUIT DIRECTORY | 07. MESSAGE FILE |
| 03. TRUNK DIRECTORY | 08. SUBSCRIBER LIST |
| 04. TERMINAL DIRECTORY | 09. INSTALLATION LIST |
| 05. SATELLITE DIRECTORY | 10. TRAFFIC REPORT FILE |

A RECORD OF THE FILE YOU HAVE SELECTED

HAS THE FOLLOWING FORMAT:

THE KEY HAS A
CHARACTER CODE IN FORM

DO YOU WISH TO MODIFY THIS FILE?

1. YES.
2. NO.

THE 2 BYTE ALPHANUMERIC LOCATION KEY OF THE CIRCUIT OR
TRUNK DIRECTORY FILES MAY BE USED AS A KEY TO CROSS-
REFERENCE THE TERMINAL DIRECTORY FILE. DO YOU WISH
TO CROSS-REFERENCE?

1. YES.
2. NO.

PLEASE ENTER ONE OF THE ABOVE INTEGER VALUES ON CRT DISPLAY.
THE 2 BYTE ALPHANUMERIC LOCATION KEY OF THE TERMINAL
DIRECTORY FILE MAY BE USED AS A KEY TO CROSS-REFERENCE
THE CIRCUIT DIRECTORY AND/OR TRUNK DIRECTORY FILES.

PLEASE SELECT MODE OF ACCESS.

1. NO CROSS-REFERENCE.
2. CROSS-REFERENCE CIRCUIT DIRECTORY.
3. CROSS-REFERENCE TRUNK DIRECTORY.
4. CROSS-REFERENCE BOTH.

PLEASE ENTER ONE OF THE ABOVE INTEGER VALUES ON CRT DISPLAY.

PLEASE ENTER ACCESS KEY.

PLEASE ENTER KEY OF RECORD TO BE MODIFIED

RECORD MAY BE LOCKED. *NOT YET IMPLEMENTED*

FOR THIS RECORD PLEASE SELECT TYPE OF DESIRED CHANGE

1. UPDATE.
2. DELETE.

MAKE ANY CHANGES YOU WISH USING CRT KEYBOARD.
WHEN CHANGES ARE COMPLETE, PRESS XMIT KEY.

ENTER UPDATED RECORD ON FIRST LINE OF CRT

THE RECORD DOES NOT EXIST. DO YOU WISH
TO ADD A RECORD TO THE FILE?

1. YES
2. NO

KEY IS

CHARACTERS OF TYPE

ENTER THE RECORD ACCORDING TO THE ABOVE FORMAT.

WHEN RECORD IS COMPLETE, PRESS XMIT KEY.

ENTER NEW RECORD ON FIRST LINE OF CRT.

** MODIFICATION COMPLETE **

PLEASE SELECT ONE OF THE FOLLOWING:

1. NEW RECORD OF FILE.
2. NEW FILE.
3. NEW MODE OF OPERATION.
4. LOGOUT 5. DISPLAY SAME RECORD.
1000 RECORDS EACH 8 BYTES LONG
FACILITY DESCRIPTION(2)-KEY
DESCRIPTIVE INFO(6).
LOCATION(2) KEY
TYPE OPERATION(1),TYPE SERV(1),SUBSCRIB. RT.(2),MOD RT(2),TECH SPEC(2),
COMMER CO(4), DCA AREA(1),AVAILABILITY(1), AGENCY CODE(2).
LOCATION(2)-KEY
BANDWIDTH(3),CHAN NO(1),ROUTE NO(2),
DCA AREA(1),AVAIL(1),CAPACITY(2),TRNK MI(2),SUPERGROUP(2).
TERM EQUIP(2)-KEY
OTHER TERM EQUIP(2),LOCATION(2),-KEY FOR CR,
TRUNK INFO(2),CIRCUIT INFO(2).
192 NAME/CODE(4)-KEY
193 CONDITION(2),CAPACITY(2),
194 POWER(2),BANDWIDTH(2),AUTHORIZATION(2).
195 LOCATION(2)-KEY
196 TYPE OP(1),TYP SERV(1),SUB RT(2),MOD RT(2),TECH SPEC(2),
197 COMM CO(4),DCA AREA(1),AVAIL(1),AGENCY CODE(2),CIRC NO(2).
198 SOURCE CODE/DEST CODE(4)-KEY
199 LENGTH(2),CLASS(2),SEG NO(1),NO ADD SEGMENTS(1),
200 MESSAGE(40).
201 AGENCY CODE(2)-KEY
202 NAME(4),AUTHORIZATION(2),
203 DCA AREA(1),LOCATION #(1)
204 AGENCY CODE(2)-KEY
205 NAME(6),LOCATION #(1),DCA AREA(1),
206 AUTH CIV(2),AUTH MIL(2),BRANCH.
207 50 RECORDS EACH 84 BYTES LONG
208 SEGMENT NO(2)-KEY
209 LENGTH(2),REPORT(80).
THE RECORD DOES NOT EXIST. PRESS TRANSMIT PLEASE.
*ED
EDI -- DEVICE FULL
[EXIT]

>

EDI JUNK
[CREATING NEW FILE]
INPUT

*SIZE 50
*KILL
EDI>INFORM.DAT
[00050 LINES READ IN]
[PAGE 03]
*BLOCK OFF
*T
*LI

NETWORK DEVICE INFORMATION

LOCAL LOOP				LOCAL LOOP				LOCAL LOOP			
LOOP #1				LOOP #2				LOOP #3			
NT	ND	RDA	WTD	NT	ND	RDA	WTD	NT	ND	RDA	WTD
CRT	--	--	--	4	4	2	8	4	3		
HOST	1	1	3	5	2	1	9	3	2		
GATE	2	2	1	6	1	3	10	2	1		
GATE	3	3	2	7	3	4	11	1	4		

NOTE: NT IS NODE TYPE ND IS NODE DESIGNATOR, RDA IS FUNCTIONAL ADDRESS
AND WTD IS WRITE TOKEN DESTINATION.
PRESS 'T' KEY FOR NEXT INSTRUCTION.

NETWORK DEVICE INFORMATION

LOCAL LOOP				LOCAL LOOP				LOCAL LOOP			
LOOP #1				LOOP #2				LOOP #3			
NT	ND	FAD	WTD	NT	ND	FAD	WTD	NT	ND	FAD	WTD
CRT	--	--	--	4	4	3	8	4	3		
HOST	1	1	2	5	2	4	9	3	1		
GATE	2	2	3	6	1	2	10	1	2		
GATE	3	3	1	7	3	1	11	2	4		

NOTE: NT IS NODE TYPE ND IS NODE DESIGNATOR, FAD IS FUNCTIONAL ADDRESS
AND WTD IS WRITE TOKEN DESTINATION.
PRESS 'T' KEY FOR NEXT INSTRUCTION.

NETWORK DEVICE INFORMATION

LOCAL LOOP				LOCAL LOOP				LOCAL LOOP			
LOOP #1				LOOP #2				LOOP #3			
NT	ND	FAD	WTD	NT	ND	FAD	WTD	NT	ND	FAD	WTD
CRT	--	--	--	4	4	3	8	4	3		
HOST	1	1	2	5	2	4	9	3	1		
GATE	2	2	3	6	1	2	10	1	2		
GATE	3	3	1	7	3	1	11	2	4		

NOTE: NT IS NODE TYPE ND IS NODE DESIGNATOR, FAD IS FUNCTIONAL ADDRESS
AND WTD IS WRITE TOKEN DESTINATION.
PRESS 'T' KEY FOR NEXT INSTRUCTION.

NETWORK DEVICE INFORMATION

LOCAL LOOP				LOCAL LOOP				LOCAL LOOP			
LOOP #1				LOOP #2				LOOP #3			
NT	ND	FAD	WTD	NT	ND	FAD	WTD	NT	ND	FAD	WTD
CRT	--	--	--	4	4	3	8	4	3		
HOST	1	1	2	5	2	4	9	3	1		
GATE	2	2	3	6	1	2	10	1	2		
GATE	3	3	1	7	3	1	11	2	4		

NOTE: NT IS NODE TYPE ND IS NODE DESIGNATOR, FAD IS FUNCTIONAL ADDRESS
AND WTD IS WRITE TOKEN DESTINATION.
PRESS 'T' KEY FOR NEXT INSTRUCTION.

NETWORK DEVICE INFORMATION

LOCAL LOOP LOOP #1				LOOP #2				LOOP #3	
NT	ND	FAD	WTD	ND	FAD	WTD	ND	FAD	WTD
CRT	--	--	--	4	4	3	8	4	3
HOST	1	1	2	5	2	4	9	3	1
GATE	2	2	3	6	1	2	10	1	2
GATE	3	3	1	7	3	1	11	2	4

NOTE: NT IS NODE TYPE ND IS NODE DESIGNATOR, FAD IS FUNCTIONAL ADDRESS
AND WTD IS WRITE TOKEN DESTINATION.
PRESS 'T' KEY FOR NEXT INSTRUCTION.

NETWORK DEVICE INFORMATION

LOCAL LOOP LOOP #1				LOOP #2				LOOP #3	
NT	ND	FAD	WTD	ND	FAD	WTD	ND	FAD	WTD
CRT	--	--	--	4	4	3	8	4	3
HOST	1	1	2	5	2	4	9	3	1
GATE	2	2	3	6	1	2	10	1	2
GATE	3	3	1	7	3	1	11	2	4

NOTE: NT IS NODE TYPE ND IS NODE DESIGNATOR, FAD IS FUNCTIONAL ADDRESS
AND WTD IS WRITE TOKEN DESTINATION.
PRESS 'T' KEY FOR NEXT INSTRUCTION.

NETWORK DEVICE INFORMATION

LOCAL LOOP LOOP #1				LOOP #2				LOOP #3	
NT	ND	FAD	WTD	ND	FAD	WTD	ND	FAD	WTD
CRT	--	--	--	4	4	3	8	4	3
HOST	1	1	2	5	2	4	9	3	1
GATE	2	2	3	6	1	2	10	1	2
GATE	3	3	1	7	3	1	11	2	4

NOTE: NT IS NODE TYPE ND IS NODE DESIGNATOR, FAD IS FUNCTIONAL ADDRESS
AND WTD IS WRITE TOKEN DESTINATION.
PRESS 'T' KEY FOR NEXT INSTRUCTION.

NETWORK DEVICE INFORMATION

LOCAL LOOP LOOP #1				LOOP #2				LOOP #3	
NT	ND	FAD	WTD	ND	FAD	WTD	ND	FAD	WTD
CRT	--	--	--	4	4	3	8	4	3
HOST	1	1	2	5	2	4	9	3	1
GATE	2	2	3	6	1	2	10	1	2
GATE	3	3	1	7	3	1	11	2	4

NOTE: NT IS NODE TYPE ND IS NODE DESIGNATOR, FAD IS FUNCTIONAL ADDRESS
AND WTD IS WRITE TOKEN DESTINATION.
PRESS 'T' KEY FOR NEXT INSTRUCTION.

NETWORK DEVICE INFORMATION

LOCAL LOOP LOOP #1				LOOP #2				LOOP #3	
NT	ND	FAD	WTD	ND	FAD	WTD	ND	FAD	WTD
CRT	--	--	--	4	4	3	8	4	3
HOST	1	1	2	5	2	4	9	3	1
GATE	2	2	3	6	1	2	10	1	2
GATE	3	3	1	7	3	1	11	2	4

NOTE: NT IS NODE TYPE ND IS NODE DESIGNATOR, FAD IS FUNCTIONAL ADDRESS
AND WTD IS WRITE TOKEN DESTINATION.
PRESS 'T' KEY FOR NEXT INSTRUCTION.

NETWORK DEVICE INFORMATION

LOCAL LOOP LOOP #1				LOOP #2				LOOP #3		
NT	ND	FAD	WTD	ND	FAD	WTD	ND	FAD	WTD	
CRT	--	--	--	4	4	3	8	4	3	
HOST	1	1	2	5	2	4	9	3	1	
GATE	2	2	3	6	1	2	10	1	2	
GATE	3	3	1	7	3	1	11	2	4	

NOTE: NT IS NODE TYPE ND IS NODE DESIGNATOR, FAD IS FUNCTIONAL ADDRESS
AND WTD IS WRITE TOKEN DESTINATION.
PRESS 'T' KEY FOR NEXT INSTRUCTION.

NETWORK DEVICE INFORMATION

LOCAL LOOP LOOP #1				LOOP #2				LOOP #3		
NT	ND	FAD	WTD	ND	FAD	WTD	ND	FAD	WTD	
CRT	--	--	--	4	4	3	8	4	3	
HOST	1	1	2	5	2	4	9	3	1	
GATE	2	2	3	6	1	2	10	1	2	
GATE	3	3	1	7	3	1	11	2	4	

NOTE: NT IS NODE TYPE ND IS NODE DESIGNATOR, FAD IS FUNCTIONAL ADDRESS
AND WTD IS WRITE TOKEN DESTINATION.
PRESS 'T' KEY FOR NEXT INSTRUCTION.

LID/FAD CONVERSION TABLE

1	2	3	2	2	2	2	3	3	3	3
0										
0										
0										

LID/FAD CONVERSION TABLE

1	2	3	2	2	2	2	3	3	3	3
0										
0										
0										

LID/FAD CONVERSION TABLE

1	2	3	2	2	2	2	3	3	3	3
0										
0										
0										

LID/FAD CONVERSION TABLE

1	1	1	4	2	3	1	3	3	3	3
0										
0										
0										

LID/FAD CONVERSION TABLE

1	1	1	4	2	3	1	3	3	3	3
0										
0										
0										

LID/FAD CONVERSION TABLE

1	1	1	4	2	3	1	3	3	3	3
0										
0										
0										


```

0 0 0 0 0 0 0 0 0 0 0 0 0 3
0
0 0 0 0 0 4
0
0
0
0
0
0
0 0 0 0 0 0 0 0 0 0 0 0 4
0
0 0 0 0 0 0
0
0
0
0
0 0 0 0 0 0 0 0 0 0 0 0 2
0
0 0 0 0 0 4
0
0
0
0
0 0 0 0 0 0 0 0 0 0 0 0 1
0
0 0 0 0 0 2
0
0
0
0
0 0 0 0 0 0 0 0 0 0 0 0 3
0
0 0 0 0 0 0
0
0
0
0 0 0 0 0 0 0 0 0 0 0 0 1
0
0 0 0 0 0 4
0
0
0
0
0 0 0 0 0 0 0 0 0 0 0 0 2
0
0 0 0 0 0 0
0
0
0
0
0 0 0 0 0 0 0 0 0 0 0 0 4

```

NODE WORKPAGE PARAMETERS
 MOST NODE HAS DESIGNATOR 1 RDA 1 IN LOOP 1
 ALTERNATE GATEWAY FUNCTIONAL ADDRESSES . . . 2, 3

MAXIMUM INPUT QUEUE SIZE (TO EXTERNAL) 4
 MAXIMUM OUTPUT QUEUE SIZE (TO BITSTREAM) 1
 MAXIMUM PACKET XMISSIONS BEFORE ERROR MESSAGE . . . 6
 TIMEOUT FOR WRITE TOKEN REGENERATION 4
 TIMEOUT FOR PACKET RETRANSMISSION 41
 NUMBER OF NODES IN SYSTEM 11
 NUMBER OF NODES IN LOOP 3
 PRESS 'T' KEY FOR NEXT INSTRUCTION
 NODE WORKPAGE PARAMETERS
 GATE#2 NODE HAS DESIGNATOR 2 RDA 2 IN LOOP 1
 ALTERNATE GATEWAY FUNCTIONAL ADDRESSES 2, 3
 MAXIMUM INPUT QUEUE SIZE (TO EXTERNAL) 10
 MAXIMUM OUTPUT QUEUE SIZE (TO BITSTREAM) 1
 MAXIMUM PACKET XMISSIONS BEFORE MSG TERM. NA
 TIMEOUT FOR WRITE TOKEN REGENERATION 7
 TIMEOUT FOR PACKET RETRANSMISSION NA
 NUMBER OF NODES IN SYSTEM 11
 NUMBER OF NODES IN LOOP 3
 PRESS 'T' KEY FOR NEXT INSTRUCTION
 NODE WORKPAGE PARAMETERS
 GATE#3 NODE HAS DESIGNATOR 3 RDA 3 IN LOOP 1
 ALTERNATE GATEWAY FUNCTIONAL ADDRESSES 2, 3
 MAXIMUM INPUT QUEUE SIZE (TO EXTERNAL) 10
 MAXIMUM OUTPUT QUEUE SIZE (TO BITSTREAM) 1
 MAXIMUM PACKET XMISSIONS BEFORE ERROR MESSAGE . . . NA
 TIMEOUT FOR WRITE TOKEN REGENERATION 12
 TIMEOUT FOR PACKET RETRANSMISSION NA
 NUMBER OF NODES IN SYSTEM 11
 NUMBER OF NODES IN LOOP 3
 PRESS 'T' KEY FOR NEXT INSTRUCTION
 NODE WORKPAGE PARAMETERS
 CRT NODE HAS DESIGNATOR 4 RDA 4 IN LOOP 2
 ALTERNATE GATEWAY FUNCTIONAL ADDRESSES 1, 3
 MAXIMUM INPUT QUEUE SIZE (TO EXTERNAL) 8
 MAXIMUM OUTPUT QUEUE SIZE (TO BITSTREAM) 1
 MAXIMUM PACKET XMISSIONS BEFORE ERROR MESSAGE . . . 8
 TIMEOUT FOR WRITE TOKEN REGENERATION 12
 TIMEOUT FOR PACKET RETRANSMISSION 41
 NUMBER OF NODES IN SYSTEM 11
 NUMBER OF NODES IN LOOP 4
 PRESS 'T' KEY FOR NEXT INSTRUCTION
 NODE WORKPAGE PARAMETERS
 HOST NODE HAS DESIGNATOR 5 RDA 2 IN LOOP 2
 ALTERNATE GATEWAY FUNCTIONAL ADDRESSES 1, 3
 MAXIMUM INPUT QUEUE SIZE (TO EXTERNAL) 4
 MAXIMUM OUTPUT QUEUE SIZE (TO BITSTREAM) 1
 MAXIMUM PACKET XMISSIONS BEFORE ERROR MESSAGE . . . 6
 TIMEOUT FOR WRITE TOKEN REGENERATION 4
 TIMEOUT FOR PACKET RETRANSMISSION 41
 NUMBER OF NODES IN SYSTEM 11
 NUMBER OF NODES IN LOOP 4
 PRESS 'T' KEY FOR NEXT INSTRUCTION
 NODE WORKPAGE PARAMETERS
 GATE#1 NODE HAS DESIGNATOR 6 RDA 1 IN LOOP 2
 ALTERNATE GATEWAY FUNCTIONAL ADDRESSES 1, 3
 MAXIMUM INPUT QUEUE SIZE (TO EXTERNAL) 10
 MAXIMUM OUTPUT QUEUE SIZE (TO BITSTREAM) 1
 MAXIMUM PACKET XMISSIONS BEFORE ERROR MESSAGE . . . NA
 TIMEOUT FOR WRITE TOKEN REGENERATION 7
 TIMEOUT FOR PACKET RETRANSMISSION NA

```

NUMBER OF NODES IN SYSTEM . . . . . 11
NUMBER OF NODES IN LOOP . . . . . 4
PRESS 'T' KEY FOR NEXT INSTRUCTION
      NODE WORKPAGE PARAMETERS
GATE#3  NODE HAS DESIGNATOR      7      RDA      3 IN LOOP      2
ALTERNATE GATEWAY FUNCTIONAL ADDRESSES . . . . . 1, 3
MAXIMUM INPUT QUEUE SIZE (TO EXTERNAL) . . . . . 10
MAXIMUM OUTPUT QUEUE SIZE (TO BITSTREAM) . . . . . 1
MAXIMUM PACKET XMISSIONS BEFORE ERROR MESSAGE . . . NA
TIMEOUT FOR WRITE TOKEN REGENERATION . . . . . 6
TIMEOUT FOR PACKET RETRANSMISSION . . . . . NA
NUMBER OF NODES IN SYSTEM . . . . . 11
NUMBER OF NODES IN LOOP . . . . . 4
PRESS 'T' KEY FOR NEXT INSTRUCTION
      NODE WORKPAGE PARAMETERS
CRT  NODE HAS DESIGNATOR      8      RDA      4 IN LOOP      3
ALTERNATE GATEWAY FUNCTIONAL ADDRESSES . . . . . 1, 2
MAXIMUM INPUT QUEUE SIZE (TO EXTERNAL) . . . . . 8
MAXIMUM OUTPUT QUEUE SIZE (TO BITSTREAM) . . . . . 1
MAXIMUM PACKET XMISSIONS BEFORE ERROR MESSAGE . . . 8
TIMEOUT FOR WRITE TOKEN REGENERATION . . . . . 12
TIMEOUT FOR PACKET RETRANSMISSION . . . . . 41
NUMBER OF NODES IN SYSTEM . . . . . 11
NUMBER OF NODES IN LOOP . . . . . 4
PRESS 'T' KEY FOR NEXT INSTRUCTION
      NODE WORKPAGE PARAMETERS
HOST  NODE HAS DESIGNATOR      9      RDA      3 IN LOOP      3
ALTERNATE GATEWAY FUNCTIONAL ADDRESSES . . . . . 1, 2
MAXIMUM INPUT QUEUE SIZE (TO EXTERNAL) . . . . . 8
MAXIMUM OUTPUT QUEUE SIZE (TO BITSTREAM) . . . . . 1
MAXIMUM PACKET XMISSIONS BEFORE ERROR MESSAGE . . . 8
TIMEOUT FOR WRITE TOKEN REGENERATION . . . . . 14
TIMEOUT FOR PACKET RETRANSMISSION . . . . . 41
NUMBER OF NODES IN SYSTEM . . . . . 11
NUMBER OF NODES IN LOOP . . . . . 4
PRESS 'T' KEY FOR NEXT INSTRUCTION
      NODE WORKPAGE PARAMETERS
GATE#1  NODE HAS DESIGNATOR     10      RDA      1 IN LOOP      3
ALTERNATE GATEWAY FUNCTIONAL ADDRESSES . . . . . 1, 2
MAXIMUM INPUT QUEUE SIZE (TO EXTERNAL) . . . . . 10
MAXIMUM OUTPUT QUEUE SIZE (TO BITSTREAM) . . . . . 1
MAXIMUM PACKET XMISSIONS BEFORE ERROR MESSAGE . . . NA
TIMEOUT FOR WRITE TOKEN REGENERATION . . . . . 4
TIMEOUT FOR PACKET RETRANSMISSION . . . . . NA
NUMBER OF NODES IN SYSTEM . . . . . 11
NUMBER OF NODES IN LOOP . . . . . 4
PRESS 'T' KEY FOR NEXT INSTRUCTION
      NODE WORKPAGE PARAMETERS
GATE#2  NODE HAS DESIGNATOR     11      RDA 2      IN LOOP      3
ALTERNATE GATEWAY FUNCTIONAL ADDRESSES . . . . . 1, 2
MAXIMUM INPUT QUEUE SIZE (TO EXTERNAL) . . . . . 10
MAXIMUM OUTPUT QUEUE SIZE (TO BITSTREAM) . . . . . 1
MAXIMUM PACKET XMISSIONS BEFORE ERROR MESSAGE . . . NA
TIMEOUT FOR WRITE TOKEN REGENERATION . . . . . 7
TIMEOUT FOR PACKET RETRANSMISSION . . . . . NA
NUMBER OF NODES IN SYSTEM . . . . . 11
NUMBER OF NODES IN LOOP . . . . . 4
PRESS 'T' KEY FOR NEXT INSTRUCTION
$ED ?
EDI -- DEVICE FULL
[EXIT]

```

1.4 ESM Loader Utility

The ESM Loader Utility (ESMLDR) is used for loading the RAM control memories of the ESM B7* CIE microprocessors. Loading procedures are described in Section 4.3 of the ESM User Manual. Microcode object files normally reside in UIC [1,20]. The user must be in the UIC of the object file to be loaded when running ESMLDR. The object file must consist of 256 byte records. Sixteen bit instruction words resulting from the MDMPL Assembler are loaded into sequential control memory locations consisting of 12 bit instructions where the (left) most significant four bits of the sixteen bit word are dropped. The full 4K of control memory is loaded so that when an end-of-file error condition arises the remainder of memory is filled with STEP (octal 607) instructions. The end-of-file error message printed on the terminal is the normal display. The third and fourth instruction word is used for a recovery mode GOTO instruction for the case of hardware failures. This GOTO instruction is loaded at the last two instruction words so that hardware failures which cause jumps to non-programmed control memory result in STEP's being executed until the error recovery GOTO instruction at the last two words of control memory.

ESMLDR runs on host processor B only since loading hardware exists for that machine. ESM Tape #2 contains the source file (ESMLDR.FOR), object file (ESMLDR.OBJ), and task (ESMLDR.TSK). Task Builder (TKB) options include:

```
UNITS=2
ACTFIL=2
COMMON=M1710:RW
MAXBUF=256
ASG=TT1:1, SYO:2
```

ESMLDR

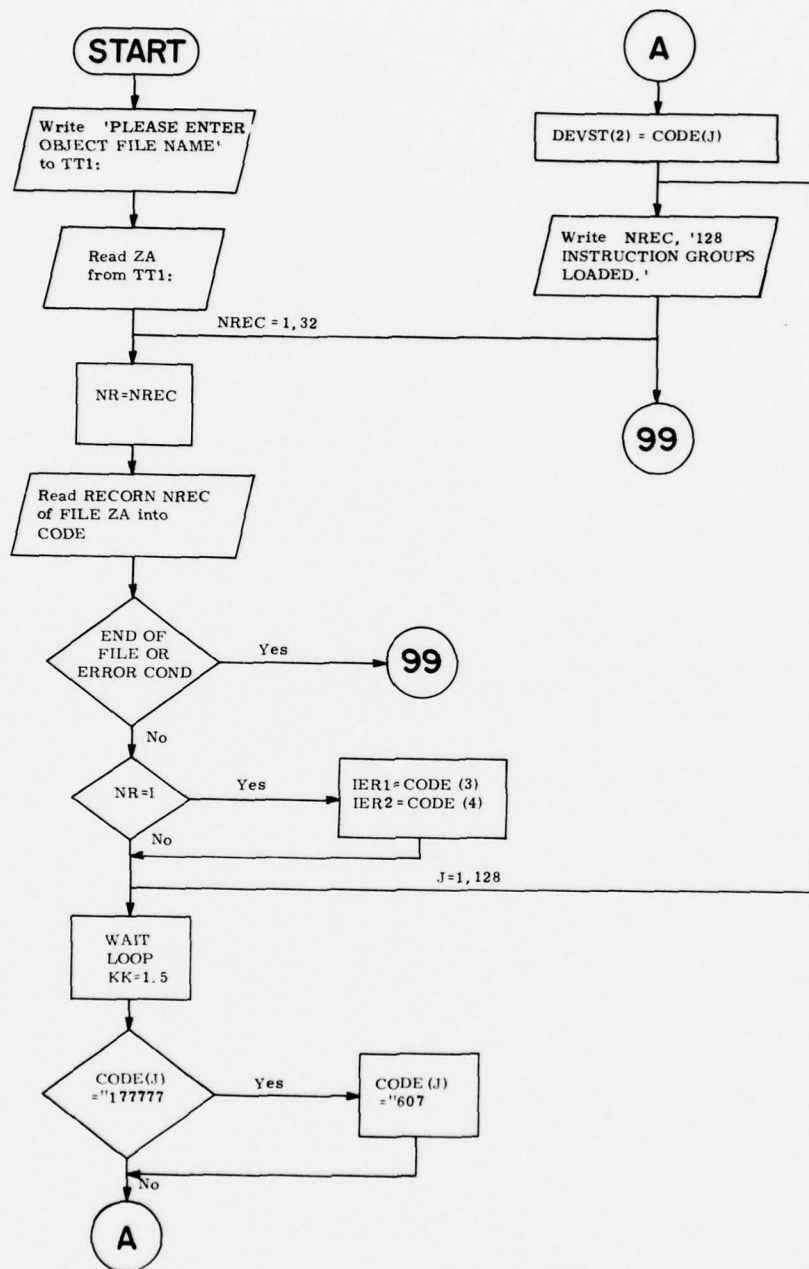


Figure 1-20. ESMLDR

ESMLDR (cont.)

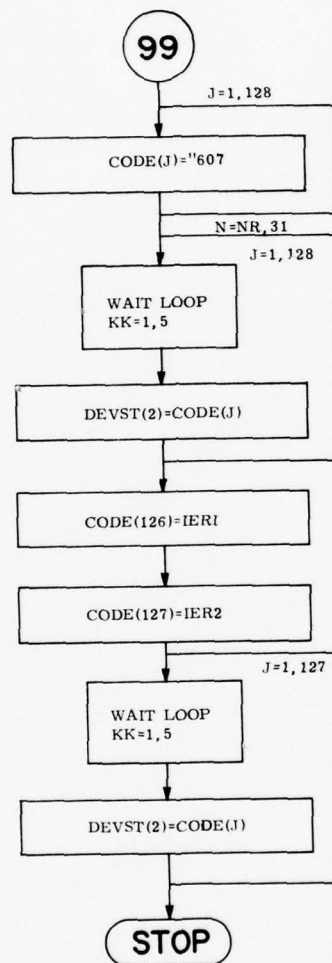


Figure 1-20. (Cont.)

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

SAT 26-FEB-77 14:52:10

PAGE 001

ESMLDR.OBJ=ESMLDR.FOR/NOSN/LI:1

```
0001      INTEGER DEVST(6),CODE(128)
0002      REAL*8 ZA(3)
0003      COMMON /M1710/DEVST
0004      DATA ISTEP/'607/
0005      DATA IAON/'177777/
0006      CALL ASSIGN(1,'TT1:')
0007      WRITE(1,11)
0008  11  FORMAT(1X,'PLEASE ENTER OBJECT FILE NAME')
0009      READ(1,12)ZA
0010  12  FORMAT(3A8)
0011      CALL ASSIGN(2,ZA)
0012      DEFINE FILE 2(32,128,U,I1)
0013      DO 20 NREC=1,32
0014      NR=NREC
0015      READ(2,NREC,END=99,ERR=99) CODE
0016      IF (NR .EQ. 1) IER1=CODE(3)
0018      IF (NR .EQ. 1) IER2=CODE(4)
0020      DO 18 J=1,128
0021      DO 16 KK=1,5
0022  16  CONTINUE
0023      IF (CODE(J) .EQ. IAON) CODE(J)=ISTEP
0025      DEVST(2)=CODE(J)
0026  18  CONTINUE
0027      WRITE (1,13) NREC
0028  13  FORMAT(1X,I3,' 128 INSTRUCTION GROUPS LOADED.')
0029      20 CONTINUE
0030      99 DO 30 J=1,128
0031      30 CODE(J)=ISTEP
0032      DO 40 N=NR,31
0033      DO 40 J=1,128
0034      DO 50 KK=1,5
0035      50 CONTINUE
0036      DEVST(2)=CODE(J)
0037      40 CONTINUE
0038      CODE(126)=IER1
0039      CODE(127)=IER2
0040      DO 60 J=1,127
0041      DO 70 KK=1,5
0042      70 CONTINUE
0043      DEVST(2)=CODE(J)
0044      60 CONTINUE
0045      END
```

>

1.5 Record Move Utility

The ESM Record Move Utility is used for moving records of the ATEC simulation files (EFLOCF, EFTRKD, EFCKTD, EFTERD) between host processors A and B to maintain the directory file (EFDIR) necessary for the distributed file system of mode 4 of the ESM User Language. The utility exists in two forms, RCMV1 for processor A, and RCMV5 for processor B. The two programs differ only in LID pair addresses (ICODE(3) of message header), and logging DECSCOPE terminal definition. ESM Tape #1 contains the source (.FOR), object (.OBJ), task (.TSK), and overlay description language files (.ODL) for the two programs.

The overlay structure for the utility consists of the main program and two overlaid routines RDLOOP and WRLOOP which are listed in Section 1.3.

The program allows records to be moved from the host processor which is the primary dialogue director for the ESM terminal running the utility to the other host processor. The user is given the choice of file and access key. If the key exists on the machine, the record is displayed and moved to the other machine by means of host-host interprocess communication control messages. The utility may be used for building a consistent distributed file system so that multiple copies of records are eliminated. To terminate the utility, enter "DS" on the ESM terminal. Note that both processors must be running the utility for successful record transfers.

Task Builder (TKB) Commands for building the utility task are:

```
TKB   RCMV5.TSK = RCMV5.ODL/MP,[1,1] SYSLIB/LB:$SHORT
```

Options include:

```
UNITS=8
ACTFIL=8
COMMON=M1710:RW
MAXBUF=240
ASG=TI:1, SYO:2:3:4:5:6:7:8
```

RCMV5

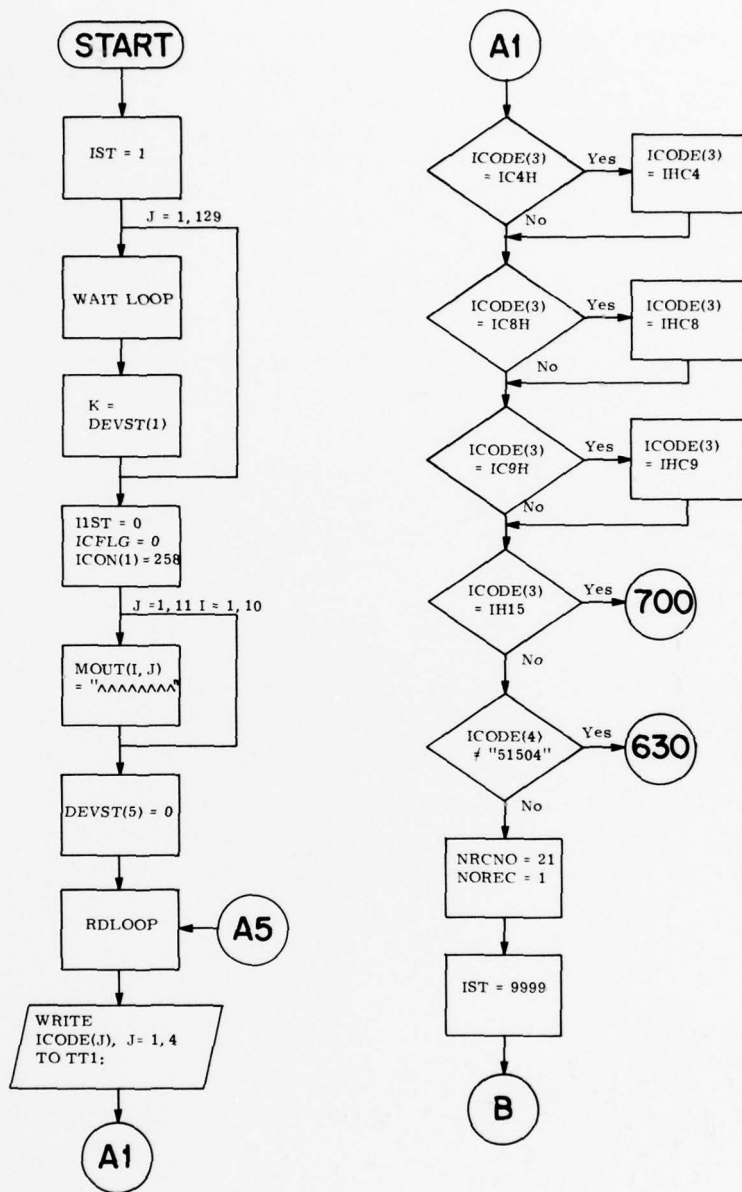


Figure 1-21. RCMV5

RCMV5(cont.)

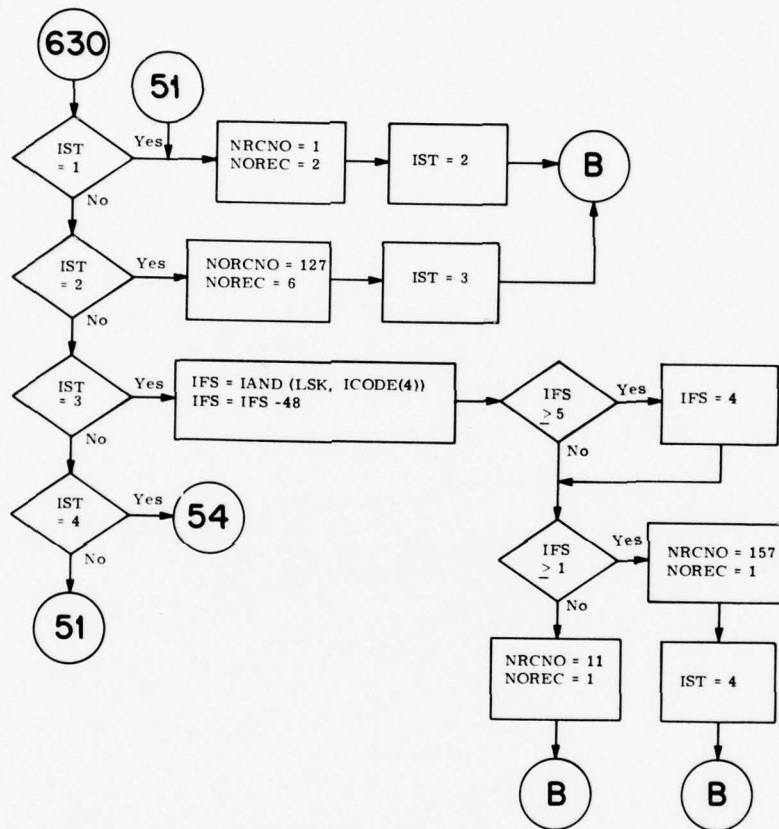


Figure 1-21. (Cont.)

RCMV5(cont.)

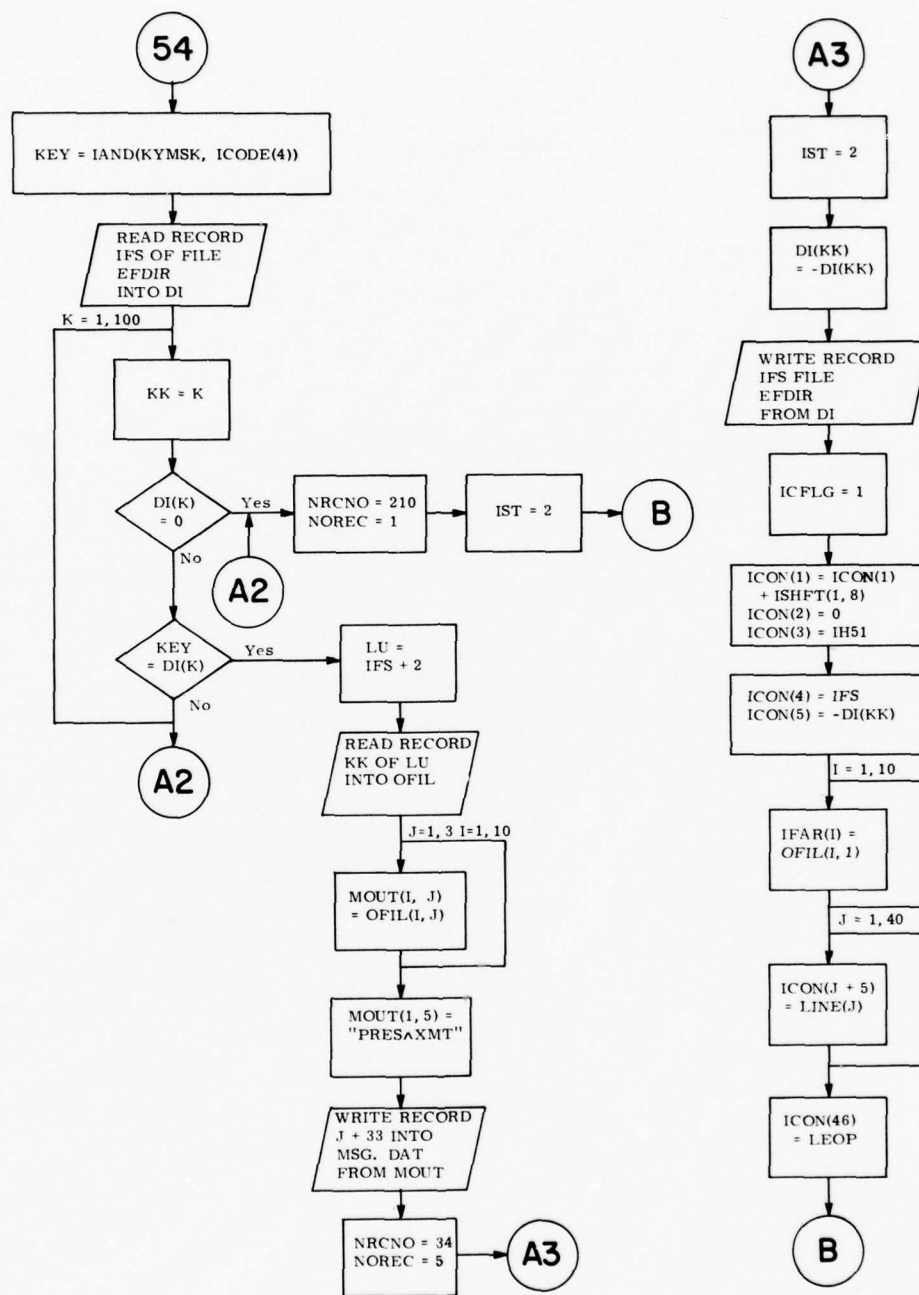


Figure 1-21. (Cont.)

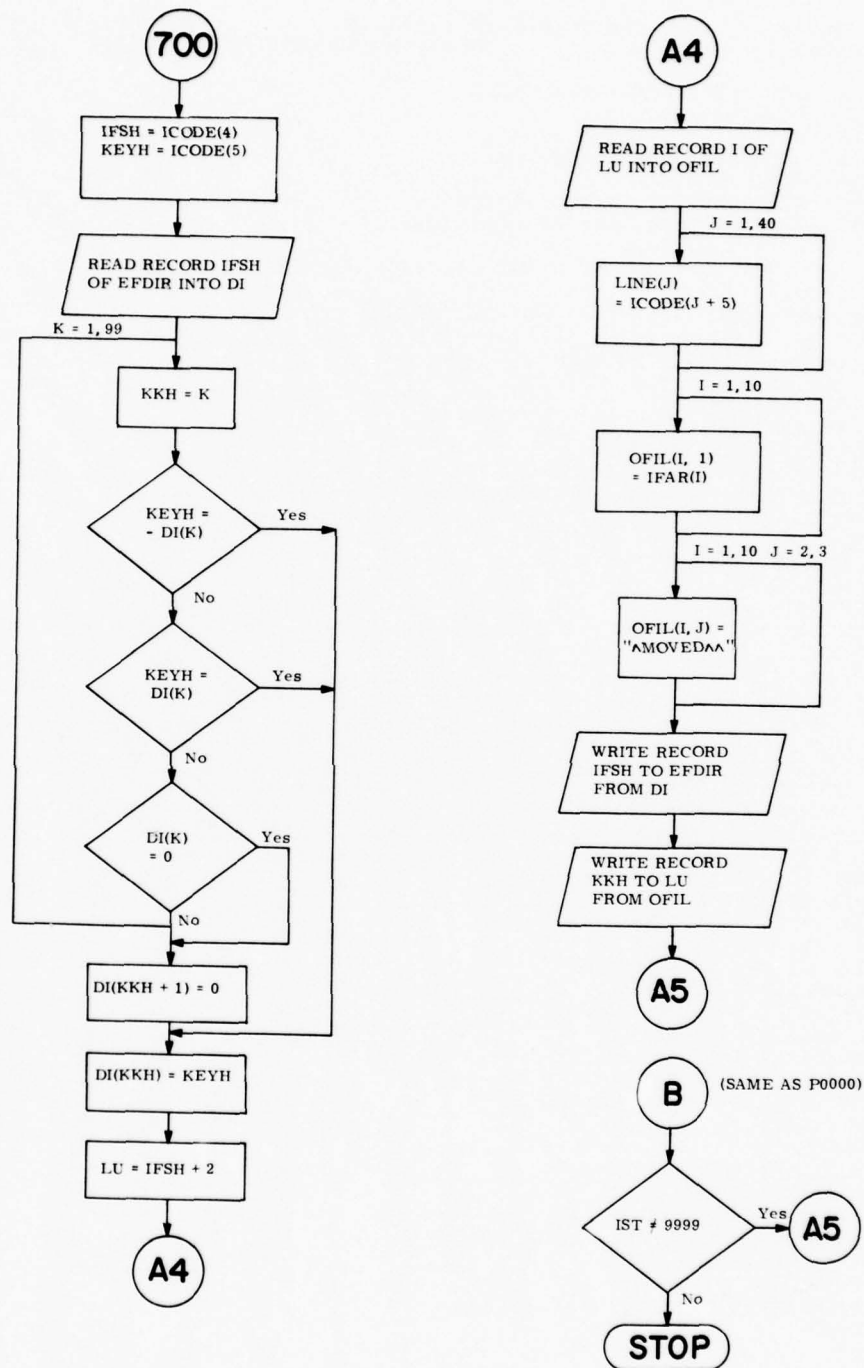


Figure 1-21. (Cont.)

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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RCHV5.OBJ=RCHV5.FOR/NOSN/LI:1

```
0001      REAL*8 MOUT,OFIL,IFAR,MVD,XMT,SK8
0002      INTEGER DEVST(6)
0003      INTEGER DI
0004      COMMON /LOOP/ICODE(128),MSK,LSK
0005      COMMON /M1710/DEVST
0006      DIMENSION OFIL(10,3),DI(100),LINE(40)
0007      DIMENSION IFAR(10),ICON(128),MOUT(10,11)
0008      EQUIVALENCE(LINE,IFAR)
0009      DATA MVD,KYMSK,XMT,IH51/' MOVED ', '77577','PRES XMT','2401/
0010      DATA LEOP/'177777/
0011      DATA LHOME,ICRLF,IDC1/'24','106412','10400/
0012      DATA SK8/' '
0013      DATA LFF4,LFF5/'14','5000/
0014      DATA LF/'12/
0015      DATA ILO/'51504/
0016      DATA IH15/'405/
0017      DATA LSK,MSK/'177','77400/
0018      DATA IC9H,IHC9/'4405','2411/
0019      DATA IC4H,IHC4,IC8H,IHC8/'2005','2404','4005','2410/
0020      15  FORMAT(1X,10A8)
0021      IST=1
0022      DO 130 J=1,129
0023      DO 140 I=1,70
0024      140 CONTINUE
0025      130 K=DEVST(1)
0026      I1ST=0
0027      ICFLG=0
0028      ICON(1)=258
0029      DO 22 J=1,11
0030      DO 22 I=1,10
0031      22 MOUT(I,J)=SK8
0032      CALL ASSIGN(1,'TT1:')
0033      CALL ASSIGN(2,'EFDIR')
0034      DEFINE FILE 2(10,100,U,I1)
0035      CALL ASSIGN(3,'EFLOCF')
0036      DEFINE FILE 3(100,120,U,I2)
0037      CALL ASSIGN(4,'EFCKTD')
0038      DEFINE FILE 4(100,120,U,I3)
0039      CALL ASSIGN(5,'EFTRKD')
0040      DEFINE FILE 5(100,120,U,I4)
0041      CALL ASSIGN(6,'EFTERD')
0042      DEFINE FILE 6(100,120,U,I5)
0043      CALL ASSIGN(7,'INFO.DAT')
0044      DEFINE FILE 7(396,40,U,I6)
0045      CALL ASSIGN(8,'MSG.DAT')
0046      DEFINE FILE 8(211,40,U,I16)
0047      DEVST(5)=0
0048      25 CALL RDLOOP
0049      WRITE(1,16)(ICODE(J),J=1,4)
0050      16  FORMAT(1X,'HEADER=',408)
0051      IF (ICODE(3) .EQ. IC4H) ICODE(3)=IHC4
0053      IF (ICODE(3) .EQ. IC8H) ICODE(3)=IHC8
0055      IF (ICODE(3) .EQ. IC9H) ICODE(3)=IHC9
0057      IF (ICODE(3) .EQ. IH15) GOTO 700
0059      IF (ICODE(4) .NE. ILO) GOTO 630
0061      NRCNO=21
```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]FRI 18-MAR-77 11:24:14 PAGE 002
RCMV5.OBJ=RCMV5.FOR/NOSN/LI:1

```
0062      NOREC=1
0063      IST=9999
0064      GOTO 12
0065 630 IF (IST .EQ. 1) GOTO 51
0067      IF (IST .EQ. 2) GOTO 52
0069      IF (IST .EQ. 3) GOTO 53
0071      IF (IST .EQ. 4) GOTO 54
0073 51 NRCNO=1
0074      NOREC=2
0075      IST=2
0076      GOTO 12
0077 52 NRCNO=127
0078      NOREC=6
0079      IST=3
0080      GOTO 12
0081 53 IFS=IAND(LSK,ICODE(4))
0082      IFS=IFS-48
0083      IF (IFS .GE. 5) IFS=4
0085      IF (IFS .GE. 1) GOTO 90
0087 99 NRCNO=11
0088      NOREC=1
0089      GOTO 12
0090 90 NRCNO=157
0091      NOREC=1
0092      IST=4
0093      GOTO 12
0094 54 KEY=IAND(KYMSK,ICODE(4))
0095      READ(2'IFS,ERR=99)(DI(I),I=1,100)
0096      DO 550 K=1,100
0097      KK=K
0098      IF (DI(K) .EQ. 0) GOTO 565
0100      IF (KEY .EQ. DI(K)) GOTO 560
0102 550 CONTINUE
0103 565      NRCNO=210
0104      NOREC=1
0105      IST=2
0106      GOTO 12
0107 560 LU=IFS+2
0108      READ(LU'KK,ERR=99)((OFIL(I,J),I=1,10),J=1,3)
0109      DO 582 J=1,3
0110      DO 582 I=1,10
0111 582      MOUT(I,J)=OFIL(I,J)
0112      MOUT(1,5)=XMT
0113      DO 5100 J=1,5
0114 5100 WRITE(8'J+33)(MOUT(I,J),I=1,10)
0115      NRCNO=34
0116      NOREC=5
0117      IST=2
0118      DI(KK)=-DI(KK)
0119      WRITE(2'IFS,ERR=99)(DI(I),I=1,100)
0120      ICFLG=1
0121      ICON(1)=ICON(1)+ISHFT(1,8)
0122      ICON(2)=0
0123      ICON(3)=IH51
0124      ICON(4)=IFS
0125      ICON(5)=-DI(KK)
```

FORTRAN IV V01B-02
CORE=08K, UIC=C20,20J

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RCMV5.OBJ=RCMV5.FOR/NOSN/LI:1

```
0126      DO 600 I=1,10
0127      600 IFAR(I)=OFIL(I,1)
0128      DO 610 J=1,40
0129      610 ICON(J+5)=LINE(J)
0130      ICON(46)=LEOP
0131      GOTO 12
0132      700 IFSH=ICODE(4)
0133      KEYH=ICODE(5)
0134      READ(2'IFSH,ERR=99)(DI(I),I=1,100)
0135      DO 1055 K=1,99
0136      KKH=K
0137      IF (KEYH .EQ. -DI(K)) GOTO 1060
0139      IF (KEYH .EQ. DI(K)) GOTO 1060
0141      IF (DI(K) .EQ. 0) GOTO 1070
0143      1055 CONTINUE
0144      1070 DI(KKH+1)=0
0145      1060 DI(KKH)=KEYH
0146      LU=IFSH+2
0147      READ(LU'1,ERR=99)((OFIL(I,J),I=1,10),J=1,3)
0148      DO 300 J=1,40
0149      300 LINE(J)=ICODE(J+5)
0150      DO 305 I=1,10
0151      305 OFIL(I,1)=IFAR(I)
0152      DO 1050 I=1,10
0153      DO 1050 J=2,3
0154      1050 OFIL(I,J)=MVD
0155      WRITE(2'IFSH,ERR=99)(DI(I),I=1,100)
0156      WRITE(LU'KKH,ERR=99)((OFIL(I,J),I=1,10),J=1,3)
0157      GOTO 25
0158      12 CONTINUE
C      WRITE TO LOOP
0159      IF (NRCNO .GE. 107) NRCNO=NRCNO+1
0161      DO 200 J=4,128
0162      200 ICODE(J)=0
0163      ICODE(127)=LEOP
0164      IF (NRCNO .NE. 11) GOTO 210
0166      ICODE(4)=LHOME
0167      DO 220 J=5,16
0168      220 ICODE(J)=LF
0169      READ(8'11)(ICODE(I),I=17,56)
0170      ICODE(57)=LHOME
0171      ICODE(58)=LEOP
0172      CALL WRLOOP(I1ST)
0173      GOTO 330
0174      210 NWRTS=4
0175      IF (NOREC .LE. 3) NWRTS=1
0177      IF (NOREC .GE. 4 .AND. NOREC .LE. 6) NWRTS=2
0179      IF (NOREC .GE. 7 .AND. NOREC .LE. 9) NWRTS=3
0181      NN=NRCNO
0182      DO 310 J=1,NWRTS
0183      JJJ=J
0184      DO 450 K=4,126
0185      450 ICODE(K)=0
0186      IF (J .EQ. 1) ICODE(4)=LFF4
0188      IF (J .EQ. 1) ICODE(5)=LFF5
0190      READ(8'NN,ERR=500)(ICODE(I),I=6,45)
```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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RCMV5.OBJ=RCMV5.FOR/NOSN/LI:1

```
0191      N1=(J-1)*3+1
0192      IF (NOREC .LE. N1) GOTO 250
0194      NN=NN+1
0195      READ(8'NN,ERR=500)(ICODE(I),I=46,85)
0196      N2=N1+1
0197      IF (NOREC .LE. N2) GOTO 250
0199      NN=NN+1
0200      READ(8'NN,ERR=500)(ICODE(I),I=86,125)
0201      NN=NN+1
0202 250  ICODE(45)=ICRLF
0203      ICODE(85)=ICRLF
0204      ICODE(125)=ICRLF
0205      ICODE(126)=IDC1
0206      IF (J .EQ. NWRTS) ICODE(126)=LHOME
0208      CALL WRLOOP(I1ST)
0209      I1ST=1
0210 310  CONTINUE
0211      IF (ICFLG .EQ. 0) GOTO 330
0213      DO 510 J=1,128
0214 510  ICODE(J)=ICON(J)
0215      CALL WRLOOP(I1ST)
0216      ICFLG=0
0217 330  CONTINUE
C      WRITE OUT SCREEN
0218      DO 70 J=1,NOREC
0219      NOR=NRCNO+J-1
0220      READ(8'NOR)(MOUT(I,J),I=1,10)
0221 70  WRITE(1,15)(MOUT(I,J),I=1,10)
0222      DO 80 J=1,11
0223      DO 80 I=1,10
0224 80  MOUT(I,J)=0
0225 500  CONTINUE
0226      IF (IST .NE. 9999) GOTO 25
0228      END
```

>

FORTRAN IV V01R-02 FRI 18-MAR-77 11:14:18 PAGE 001
CORE=08K, UIC=[20,20] RCMV1.OBJ=RCMV1.FOR/NOSN/LI:1

```
0001      REAL*8 MOUT,OFIL,IFAR,MVD,XMT,SK8
0002      INTEGER DEVST(6)
0003      INTEGER DI
0004      COMMON /LOOP/ICODE(128),MSK,LSK
0005      COMMON /M1710/DEVST
0006      DIMENSION OFIL(10,3),DI(100),LINE(40)
0007      DIMENSION IFAR(10),ICON(128),MOUT(10,11)
0008      EQUIVALENCE(LINE,IFAR)
0009      DATA MVD,KYMSK,XMT,IH51/' MOVED ', '77577','PRES XMT','2401/
0010      DATA LEOP/'177777/
0011      DATA LHOME,ICRLF,IDC1/'24','106412','10400/
0012      DATA SK8/'
0013      DATA LFF4,LFF5/'14','5000/
0014      DATA LF/'12/
0015      DATA ILO/'51504/
0016      DATA IH15/'405/
0017      DATA LSK,MSK/'177','77400/
0018      DATA IC9H,IHC9/'4401','411/
0019      DATA IC4H,IHC4,IC8H,IHC8/'2001','404','4001','410/
0020      15  FORMAT(1X,10A8)
0021      IST=1
0022      DO 130 J=1,129
0023      DO 140 I=1,70
0024      140 CONTINUE
0025      130 K=DEVST(1)
0026      I1ST=0
0027      ICFLG=0
0028      ICON(1)=258
0029      DO 22 J=1,11
0030      DO 22 I=1,10
0031      22  MOUT(I,J)=SK8
0032      CALL ASSIGN(1,'TT0:')
0033      CALL ASSIGN(2,'EFDIR')
0034      DEFINE FILE 2(10,100,U,I1)
0035      CALL ASSIGN(3,'EFLOCF')
0036      DEFINE FILE 3(100,120,U,I2)
0037      CALL ASSIGN(4,'EFCKTD')
0038      DEFINE FILE 4(100,120,U,I3)
0039      CALL ASSIGN(5,'EFTRKD')
0040      DEFINE FILE 5(100,120,U,I4)
0041      CALL ASSIGN(6,'EFTERD')
0042      DEFINE FILE 6(100,120,U,I5)
0043      CALL ASSIGN(7,'INFO.DAT')
0044      DEFINE FILE 7(396,40,U,I6)
0045      CALL ASSIGN(8,'MSG.DAT')
0046      DEFINE FILE 8(211,40,U,I16)
0047      DEVST(5)=0
0048      25  CALL RDLOOP
0049      WRITE(1,16)(ICODE(J),J=1,4)
0050      16  FORMAT(1X,'HEADER=',408)
0051      IF (ICODE(3) .EQ. IC4H) ICODE(3)=IHC4
0053      IF (ICODE(3) .EQ. IC8H) ICODE(3)=IHC8
0055      IF (ICODE(3) .EQ. IC9H) ICODE(3)=IHC9
0057      IF (ICODE(3) .EQ. IH51) GOTO 700
0059      IF (ICODE(4) .NE. ILO) GOTO 630
0061      NRCNO=21
```

FORTRAN IV V01B-02
CORE=08K, UIC=L20,20JFRI 18-MAR-77 11:14:18 PAGE 002
RCMV1.OBJ=RCMV1.FOR/NOSN/LI:1

```
0062      NOREC=1
0063      IST=9999
0064      GOTO 12
0065 630 IF (IST .EQ. 1) GOTO 51
0067      IF (IST .EQ. 2) GOTO 52
0069      IF (IST .EQ. 3) GOTO 53
0071      IF (IST .EQ. 4) GOTO 54
0073 51  NRCNO=1
0074      NOREC=2
0075      IST=2
0076      GOTO 12
0077 52  NRCNO=127
0078      NOREC=6
0079      IST=3
0080      GOTO 12
0081 53  IFS=IAND(LSK,ICODE(4))
0082      IFS=IFS-48
0083      IF (IFS .GE. 5) IFS=4
0085      IF (IFS .GE. 1) GOTO 90
0087 99  NRCNO=11
0088      NOREC=1
0089      GOTO 12
0090 90  NRCNO=157
0091      NOREC=1
0092      IST=4
0093      GOTO 12
0094 54  KEY=IAND(KYMSK,ICODE(4))
0095      READ(2'IFS,ERR=99')(DI(I),I=1,100)
0096      DO 550 K=1,100
0097      KK=K
0098      IF (DI(K) .EQ. 0) GOTO 565
0100      IF (KEY .EQ. DI(K)) GOTO 560
0102 550 CONTINUE
0103 565  NRCNO=210
0104      NOREC=1
0105      IST=2
0106      GOTO 12
0107 560  LU=IFS+2
0108      READ(LU'KK,ERR=99')((OFIL(I,J),I=1,10),J=1,3)
0109      DO 582 J=1,3
0110      DO 582 I=1,10
0111 582  MOUT(I,J)=OFIL(I,J)
0112      MOUT(1,5)=XMT
0113      DO 5100 J=1,5
0114 5100 WRITE(8'J+33')(MOUT(I,J),I=1,10)
0115      NRCNO=34
0116      NOREC=5
0117      IST=2
0118      DI(KK)=-DI(KK)
0119      WRITE(2'IFS,ERR=99')(DI(I),I=1,100)
0120      ICFLG=1
0121      ICON(1)=ICON(1)+ISHFT(1,8)
0122      ICON(2)=0
0123      ICON(3)=IH15
0124      ICON(4)=IFS
0125      ICON(5)=-DI(KK)
```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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RCMV1.OBJ=RCMV1.FOR/NOSN/LI:1

```
0126      DO 600 I=1,10
0127  600  IFAR(I)=OFIL(I,1)
0128      DO 610 J=1,40
0129  610  ICON(J+5)=LINE(J)
0130      ICON(46)=LEOF
0131      GOTO 12
0132  700  IFSH=ICODE(4)
0133      KEYH=ICODE(5)
0134      READ(2'IFSH,ERR=99)(DI(I),I=1,100)
0135      DO 1055 K=1,99
0136      KKH=K
0137      IF (KEYH .EQ. -DI(K)) GOTO 1060
0139      IF (KEYH .EQ. DI(K)) GOTO 1060
0141      IF (DI(K) .EQ. 0) GOTO 1070
0143  1055  CONTINUE
0144  1070  DI(KKH+1)=0
0145  1060  DI(KKH)=KEYH
0146      LU=IFSH+2
0147      READ(LU'1,ERR=99)((OFIL(I,J),I=1,10),J=1,3)
0148      DO 300 J=1,40
0149  300  LINE(J)=ICODE(J+5)
0150      DO 305 I=1,10
0151  305  OFIL(I,1)=IFAR(I)
0152      DO 1050 I=1,10
0153      DO 1050 J=2,3
0154  1050  OFIL(I,J)=MVD
0155      WRITE(2'IFSH,ERR=99)(DI(I),I=1,100)
0156      WRITE(LU'KKH,ERR=99)((OFIL(I,J),I=1,10),J=1,3)
0157      GOTO 25
0158  12  CONTINUE
0159  C  WRITE TO LOOP
0161      IF (NRCNO .GE. 107) NRCNO=NRCNO+1
0162      DO 200 J=4,128
0163  200  ICODE(J)=0
0164      ICODE(127)=LEOF
0165      IF (NRCNO .NE. 11) GOTO 210
0166      ICODE(4)=LHOME
0167      DO 220 J=5,16
0168  220  ICODE(J)=LF
0169      READ(8'11)(ICODE(I),I=17,56)
0170      ICODE(57)=LHOME
0171      ICODE(58)=LEOF
0172      CALL WRLOOP(I1ST)
0173      GOTO 330
0174  210  NWRTS=4
0175      IF (NOREC .LE. 3) NWRTS=1
0177      IF (NOREC .GE. 4 .AND. NOREC .LE. 6) NWRTS=2
0179      IF (NOREC .GE. 7 .AND. NOREC .LE. 9) NWRTS=3
0181      NN=NRCNO
0182      DO 310 J=1,NWRTS
0183      JJJ=J
0184      DO 450 K=4,126
0185  450  ICODE(K)=0
0186      IF (J .EQ. 1) ICODE(4)=LFF4
0188      IF (J .EQ. 1) ICODE(5)=LFF5
0190      READ(8'NN,ERR=500)(ICODE(I),I=6,45)
```

FORTTRAN IV VO1B-02
CORE=0BK, UIC=[20,20]

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RCMV1.OBJ=RCMV1.FOR/NOSN/LI:1

```
0191      N1=(J-1)*3+1
0192      IF (NOREC .LE. N1) GOTO 250
0194      NN=NN+1
0195      READ(8'NN,ERR=500)(ICODE(I),I=46,85)
0196      N2=N1+1
0197      IF (NOREC .LE. N2) GOTO 250
0199      NN=NN+1
0200      READ(8'NN,ERR=500)(ICODE(I),I=86,125)
0201      NN=NN+1
0202 250  ICODE(45)=ICRLF
0203      ICODE(85)=ICRLF
0204      ICODE(125)=ICRLF
0205      ICODE(126)=IDC1
0206      IF (J .EQ. NWRTS) ICODE(126)=LHOME
0208      CALL WRLOOP(I1ST)
0209      I1ST=1
0210 310  CONTINUE
0211      IF (ICFLG .EQ. 0) GOTO 330
0213      DO 510 J=1,128
0214 510  ICODE(J)=ICON(J)
0215      CALL WRLOOP(I1ST)
0216      ICFLG=0
0217 330  CONTINUE
      C    WRITE OUT SCREEN
0218      DO 70 J=1,NOREC
0219      NOR=NRCNO+J-1
0220      READ(8'NOR)(MOUT(I,J),I=1,10)
0221 70  WRITE(1,15)(MOUT(I,J),I=1,10)
0222      DO 80 J=1,11
0223      DO 80 I=1,10
0224 80  MOUT(I,J)=0
0225 500  CONTINUE
0226      IF (IST .NE. 9999) GOTO 25
0228      END
```

>

1.6 Interprocess Communication and Resource Sharing Demonstration Program

This program is used to illustrate how the ESM may be used to perform interprocess communication and resource sharing experiments. After LOGON, the Logical ID/Functional Address (LID/FAD) Table of LID's 1-100 is displayed for the dialogue director host on an ESM terminal. The same table for the other host is then displayed after the operator transmits a character(s). After the next CRT transmission two new logical ID's are created in the system. Logical ID's 81 and 82 are created such that 81 is owned by processor B loop 2 (FAD 2) and 82 is owned by processor A loop 1 (FAD 1). Special control packets are sent to the two host nodes and two gateway nodes connecting loops 1 and 2, and the system control disk file (INFO.DAT) is updated to reflect the change. After all tables are updated and a system lock is terminated the updated LID/FAD table for the dialogue director host is displayed. After the next CRT transmission the updated table for the other host is displayed. After the next CRT transmission, the dialogue director host sends a bid request to the other host using the new LID's. The other host responds to the bid and the dialogue director host displays the message BID followed by a request for a message. When the other host node is placed in a do not execute state the dialogue director performs a 20 second timeout and responds with NO BID. If the bid has been acknowledged a message entered on the ESM terminal and transmitted is displayed on the other host's DECSCOPE implemented by host-host messages using the new LID's. The tables are then returned to their original state and displayed thus destroying the LID's that were created for the interprocess communication. Entering "DS" at an ESM terminal terminates the program.

The program exists in two forms, PROC1 for host processor A, and PROC5 for host processor B. ESM Tape #1 contains the source (.FOR), object (.OBJ), task (.TSK), and overlay description language files (.ODL) for the program. The overlay structure consists of the main program and two overlaid routines RDLOOP and WRLOOP which are listed in Section 1.3.

The Task Builder (TKB) commands for the program are:

```
TKB  PROC5.TSK=PROC5.ODL/MP, [1,1] SYSLIB/LB:$SHORT.
```

Options include:

```
UNITS=3
ACTFIL=3
MAXBUF=80
COMMON=M1710:RW
ASG=TI:1, SYO:2:3
```


Both host processors must be running the demonstration program for interprocess communication. Before running the program the STESM indirect command file must be activated (by entering @ STESM at the DECSCOPE) and the ESM loops cleared to initialize the system control file (INFO.DAT) and nodal LID/FAD tables.

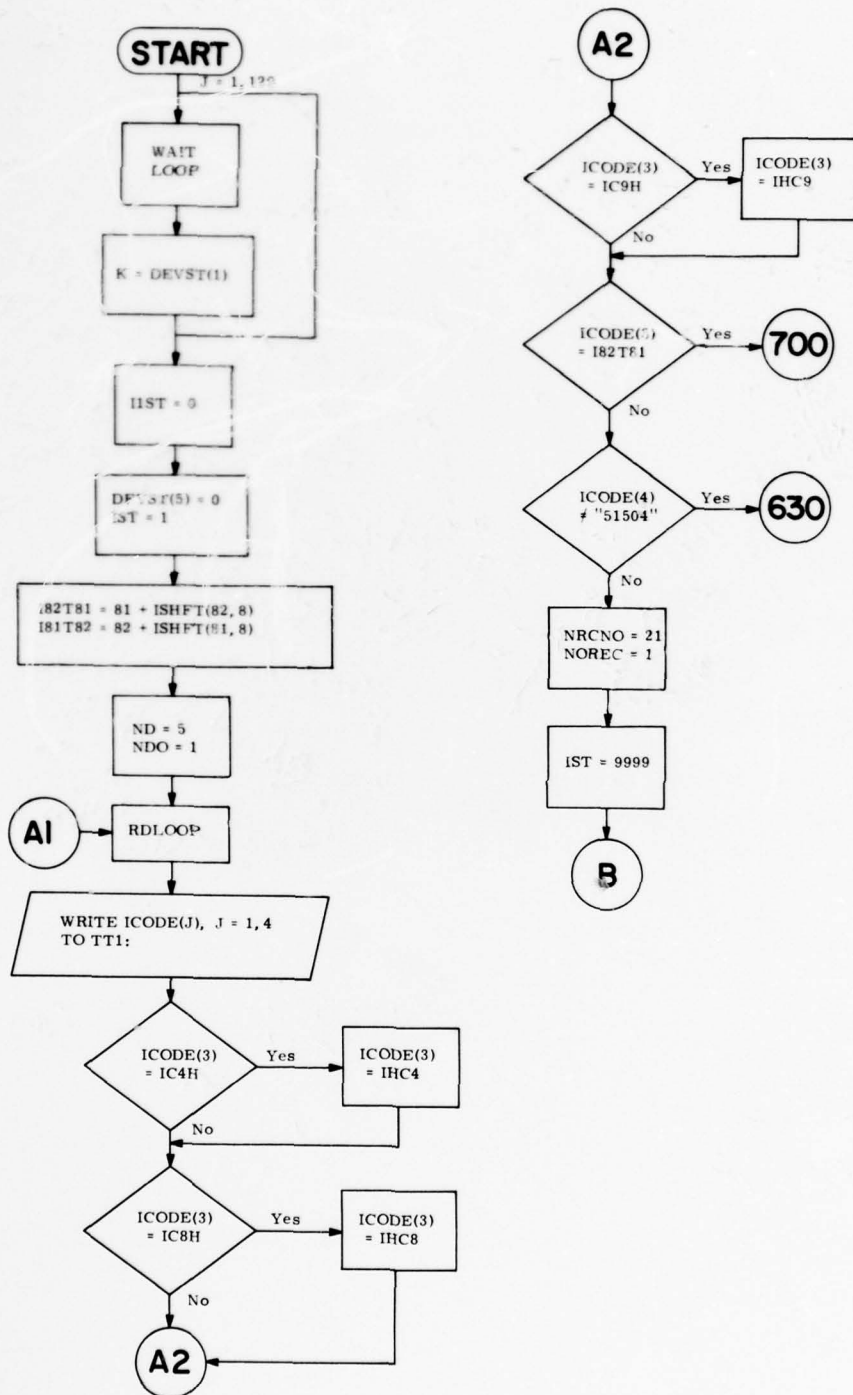


Figure 1-22. PROC5

PROC5 (cont.)

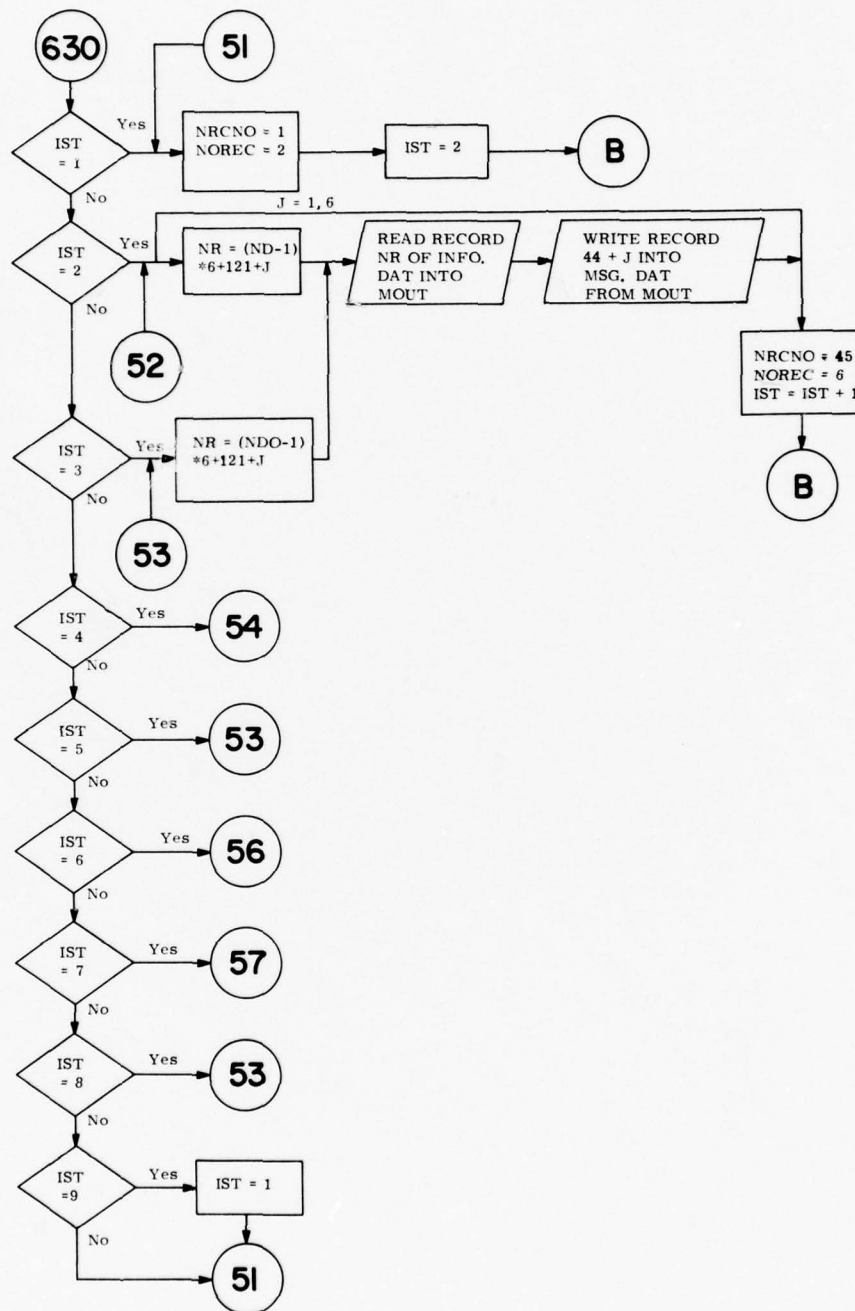


Figure 1-22. (Cont.)

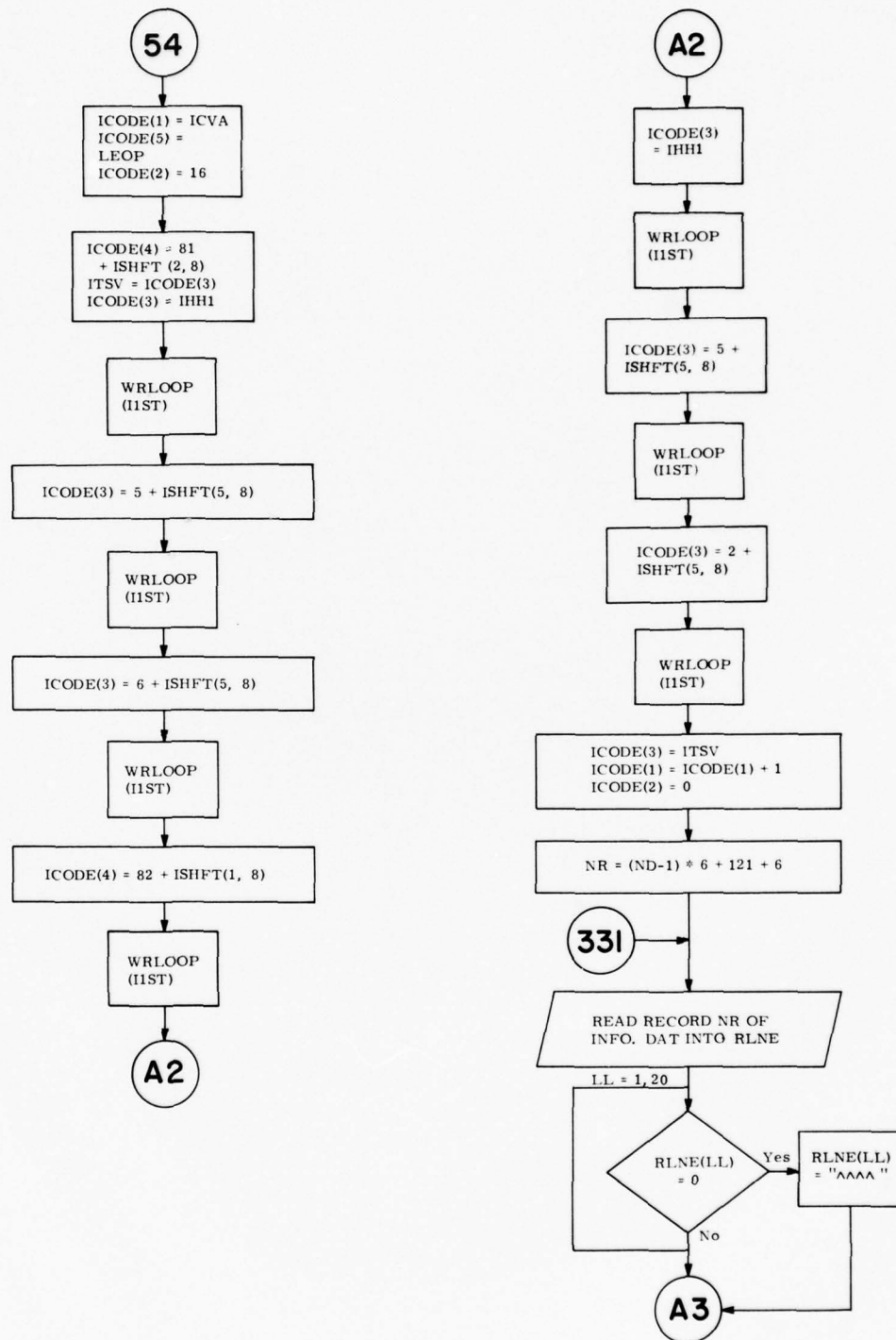


Figure 1-22. (Cont.)

PROC5 (cont.)

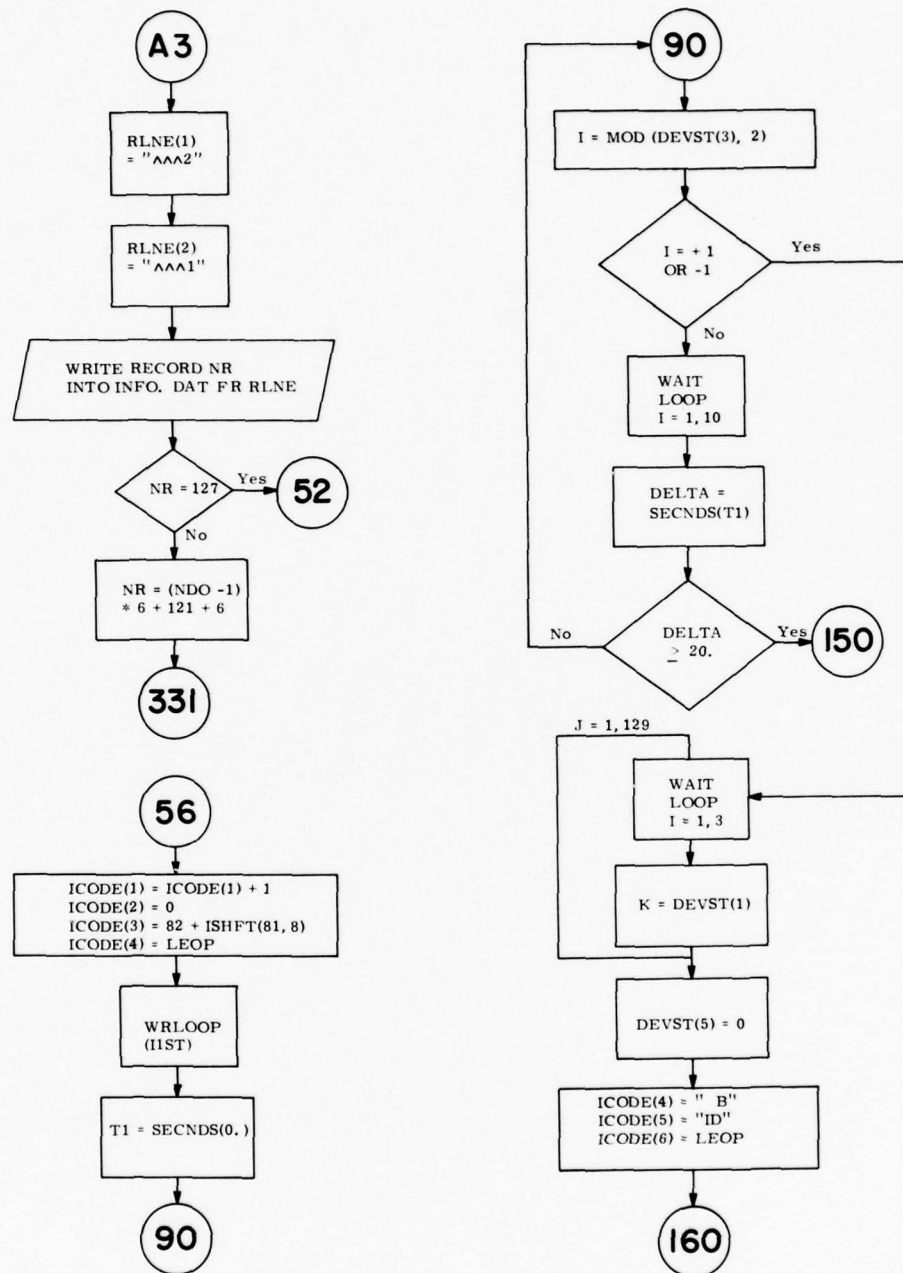


Figure 1-22. (Cont.)

PROC5 (cont.)

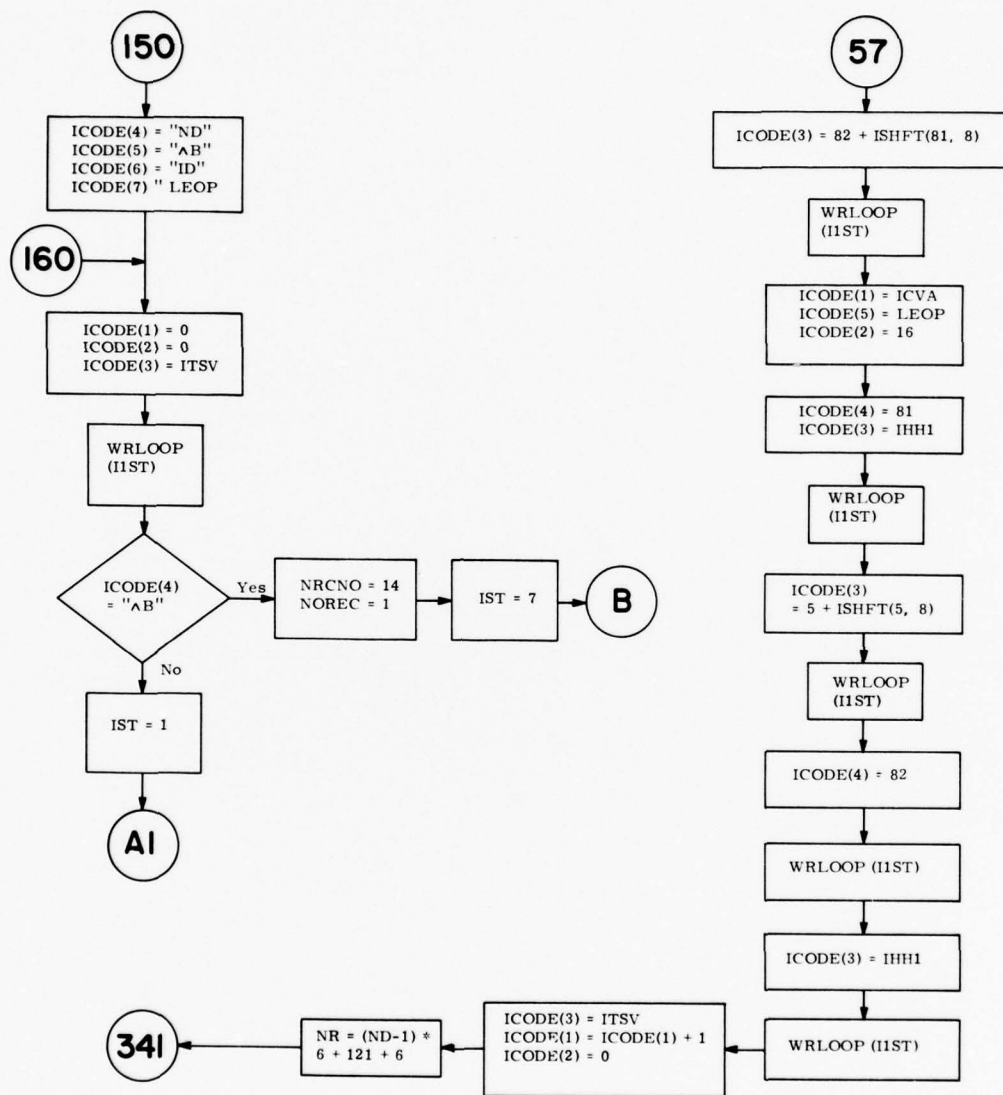


Figure 1-22. (Cont.)

PROC5 (cont.)

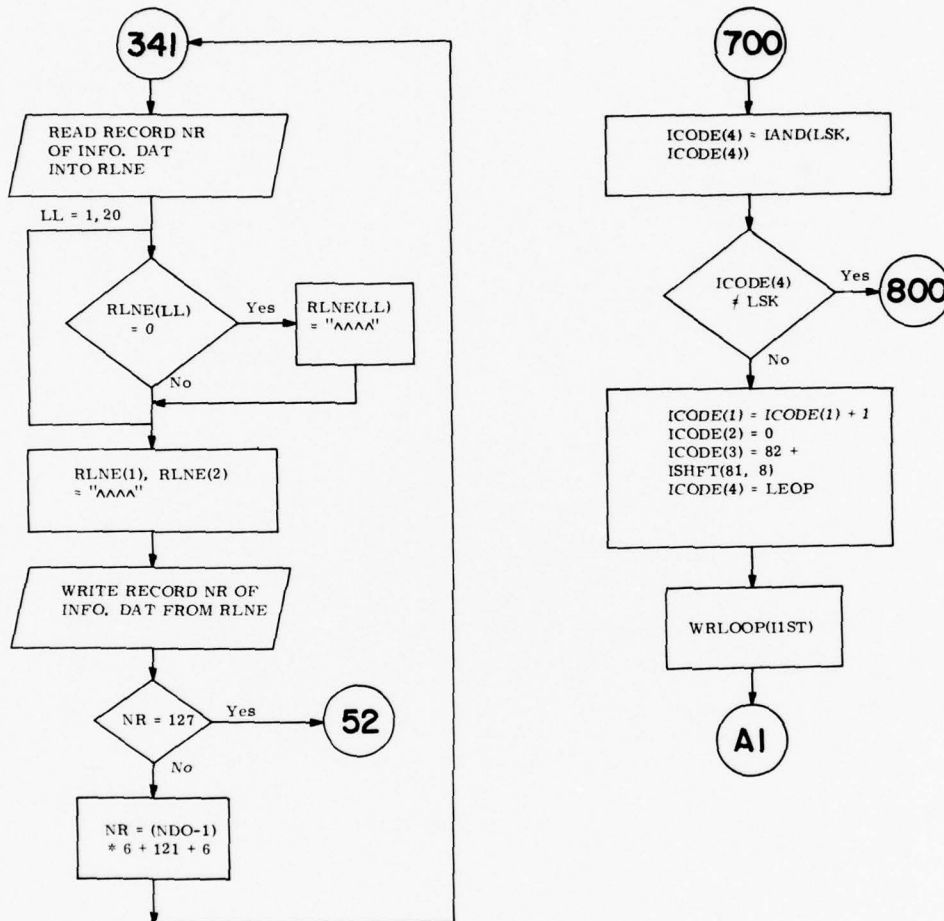


Figure 1-22. (Cont.)

PROC5 (cont.)

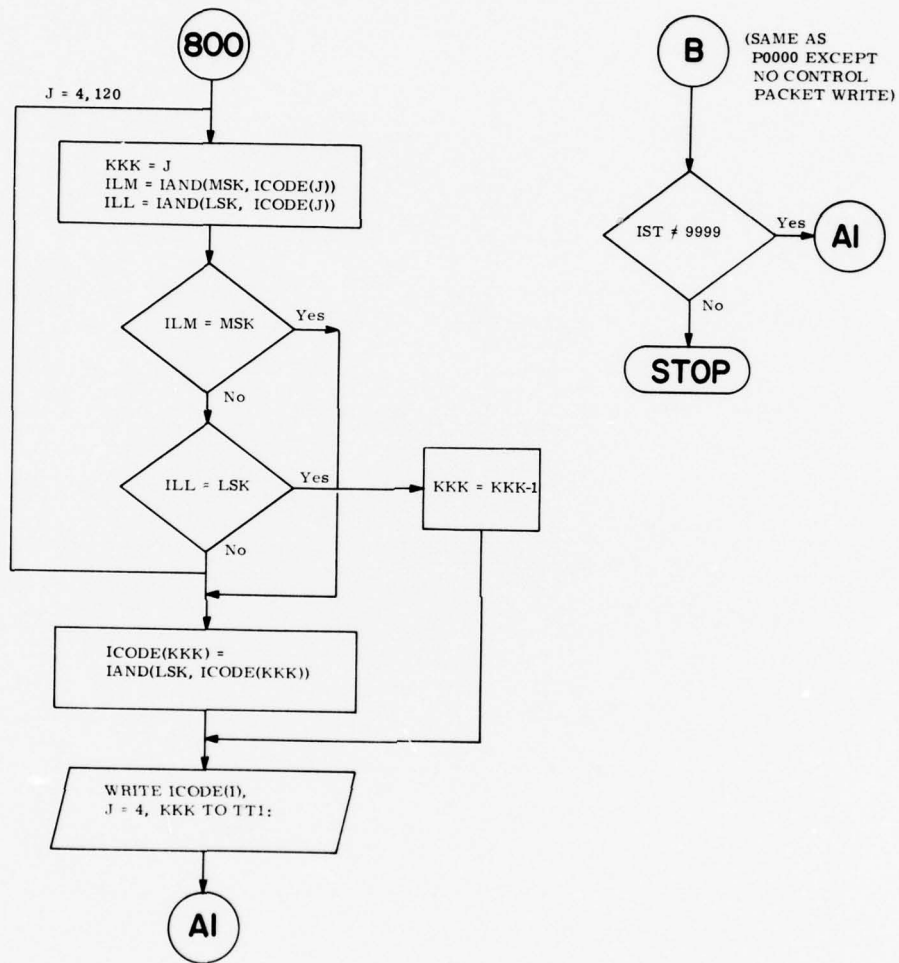


Figure 1-22. (Cont.)

FORTRAN IV V01B-02
CORE=0BK, UIC=E20,20J

FRI 18-MAR-77 13:01:02 PAGE 001
PROC5.OBJ=PROC5.FOR/NOSN/LI:1

```

      C      INTERPROCESS COMM & RESOURCE SHARING DEMO
      C
0001      INTEGER DEVST(6)
0002      COMMON /LOOP/ICODE(128),MSK,LSK
0003      COMMON /M1710/DEVST
0004      REAL*4 RONE,RTWO,RLNE(20),RSPC
0005      REAL*8 MOUT(10,11)
0006      DATA IH1H,IHH1/'405','2401/
0007      DATA IC9H,IHC9/'4405','2411/
0008      DATA IC4H,IHC4,IC8H,IHC8/'2005','2404','4005','2410/
0009      DATA ILO,ICVA,LEOF/'51504','125125','177777/
0010      DATA RONE,RTWO,RSPC/' 1',' 2',' '/
0011      DATA NO,IB,ID/'NO',' B',' ID'/
0012      DATA LSK/'377/
0013      DATA LHOME,ICRLF,IDC1/'24','106412','10400/
0014      DATA LFF4,LFF5/'14','5000/
0015      DATA LF/'12/
0016      DATA MSK/'177400/
0017      15  FORMAT(1X,10A8)
0018      DO 130 J=1,129
0019      DO 140 I=1,70
0020      140 CONTINUE
0021      130 K=DEVST(1)
0022      IIST=0
0023      CALL ASSIGN(1,'TT1:')
0024      CALL ASSIGN(2,'INFO.DAT')
0025      DEFINE FILE 2(396,40,U,11)
0026      CALL ASSIGN(3,'MSG.DAT')
0027      DEFINE FILE 3(211,40,U,12)
0028      DEVST(5)=0
0029      IST=1
0030      I82T81=81+ISHFT(82,8)
0031      I81T82=82+ISHFT(81,8)
0032      ND=5
0033      NDO=1
0034      25 CALL RDLLOOP
0035      WRITE(1,16)(ICODE(J),J=1,4)
0036      16  FORMAT(1X,'HEADER=',408)
0037      IF (ICODE(3) .EQ. IC4H) ICODE(3)=IHC4
0039      IF (ICODE(3) .EQ. IC8H) ICODE(3)=IHC8
0041      IF (ICODE(3) .EQ. IC9H) ICODE(3)=IHC9
0043      IF (ICODE(3) .EQ. I82T81) GOTO 700
0045      IF (ICODE(4) .NE. ILO) GOTO 630
0047      NRCNO=21
0048      NOREC=1
0049      IST=9999
0050      GOTO 12
0051      630 IF (IST .EQ. 1) GOTO 51
0053      IF (IST .EQ. 2) GOTO 52
0055      IF (IST .EQ. 3) GOTO 53
0057      IF (IST .EQ. 4) GOTO 54
0059      IF (IST .EQ. 5) GOTO 55
0061      IF (IST .EQ. 6) GOTO 56
0063      IF (IST .EQ. 7) GOTO 57
0065      IF (IST .EQ. 8) GOTO 58
0067      IF (IST .EQ. 9) IST=1

```

FORTTRAN IV V01B-02
CORE=08K, UIC=[20,20]FRI 18-MAR-77 13:01:02 PAGE 002
PROC5.OBJ=PROC5.FOR/NOSN/LI:1

```
0069      GOTO 51
0070      51 NRCNO=1
0071          NOREC=2
0072          IST=2
0073      GOTO 12
0074      52 DO 362 J=1,6
0075          NR=(ND-1)*6+121+J
0076          READ(2'NR')(MOUT(I,J),I=1,10)
0077      362 WRITE(3'44+J')(MOUT(I,J),I=1,10)
0078          NRCNO=45
0079          NOREC=6
0080          IST=IST+1
0081      GOTO 12
0082      53 DO 363 J=1,6
0083          NR=(NDO-1)*6+121+J
0084          READ(2'NR')(MOUT(I,J),I=1,10)
0085      363 WRITE(3'44+J')(MOUT(I,J),I=1,10)
0086          NRCNO=45
0087          NOREC=6
0088          IST=IST+1
0089      GOTO 12
0090      54 ICODE(1)=ICVA
0091          ICODE(5)=LEOP
0092          ICODE(2)=16
0093          ICODE(4)=81+ISHFT(2,8)
0094          ITSV=ICODE(3)
0095          ICODE(3)=IHH1
0096          CALL WRLOOP(I1ST)
0097          ICODE(3)=5+ISHFT(5,8)
0098          CALL WRLOOP(I1ST)
0099          ICODE(3)=6+ISHFT(5,8)
0100          CALL WRLOOP(I1ST)
0101          ICODE(4)=82+ISHFT(1,8)
0102          CALL WRLOOP(I1ST)
0103          ICODE(3)=IHH1
0104          CALL WRLOOP(I1ST)
0105          ICODE(3)=5+ISHFT(5,8)
0106          CALL WRLOOP(I1ST)
0107          ICODE(3)=2+ISHFT(5,8)
0108          CALL WRLOOP(I1ST)
0109          ICODE(3)=ITSV
0110          ICODE(1)=ICODE(1)+1
0111          ICODE(2)=0
0112          NR=(ND-1)*6+121+6
0113      331 READ(2'NR')(RLNE(I),I=1,20)
0114          DO 332 LL=1,20
0115      332 IF (RLNE(LL).EQ. 0) RLNE(LL)=RSFC
0116          RLNE(1)=RTWO
0117          RLNE(2)=RONE
0118          WRITE(2'NR')(RLNE(I),I=1,20)
0119          IF (NR.EQ. 127) GOTO 52
0120          NR=(NDO-1)*6+121+6
0121          GOTO 331
0122      55 GOTO 53
0123      56 ICODE(1)=ICODE(1)+1
0124          ICODE(2)=0
```


FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

FRI 18-MAR-77 13:01:02

PAGE 003

PROC5.OBJ=PROC5.FOR/NOSN/LI:1

```
0127      ICODE(3)=82+ISHFT(81,8)
0128      ICODE(4)=LEOF
0129      CALL WRLOOP(I1ST)
0130      T1=SECNDS(0.)
0131      90 I=MOD(DEVST(3),2)
0132      IF (I .EQ. 1) GOTO 120
0134      IF (I .EQ. -1) GOTO 120
0136      DO 110 I=1,10
0137      110 CONTINUE
0138      DELTA=SECNDS(T1)
0139      IF (DELTA .GE. 20.) GOTO 150
0141      GOTO 90
0142      120 DO 131 J=1,129
0143      DO 141 I=1,3
0144      141 CONTINUE
0145      K=DEVST(1)
0146      131 CONTINUE
0147      DEVST(5)=0
0148      ICODE(4)=IB
0149      ICODE(5)=ID
0150      ICODE(6)=LEOF
0151      GOTO 160
0152      150 ICODE(4)=NO
0153      ICODE(5)=IB
0154      ICODE(6)=ID
0155      ICODE(7)=LEOF
0156      160 ICODE(1)=0
0157      ICODE(2)=0
0158      ICODE(3)=ITSV
0159      CALL WRLOOP(I1ST)
0160      IF (ICODE(4) .EQ. IB) GOTO 170.
0162      IST=1
0163      GOTO 25
0164      170 NRCNO=14
0165      NOREC=1
0166      IST=7
0167      GOTO 12
0168      57 ICODE(3)=82+ISHFT(81,8)
0169      CALL WRLOOP(I1ST)
0170      ICODE(1)=ICVA
0171      ICODE(5)=LEOF
0172      ICODE(2)=16
0173      ICODE(4)=81
0174      ICODE(3)=IHH1
0175      CALL WRLOOP(I1ST)
0176      ICODE(3)=5+ISHFT(5,8)
0177      CALL WRLOOP(I1ST)
0178      ICODE(4)=82
0179      CALL WRLOOP(I1ST)
0180      ICODE(3)=IHH1
0181      CALL WRLOOP(I1ST)
0182      ICODE(3)=ITSV
0183      ICODE(1)=ICODE(1)+1
0184      ICODE(2)=0
0185      NR=(ND-1)*6+121+6
0186      341 READ(2'NR')(RLNE(I),I=1,20)
```

FORTRAN IV V01B-02
CORE=0BK, UIC=C20,20J

FRI 18-MAR-77 13:01:02

PAGE 004

PROC5.OBJ=PROC5.FOR/NOSN/LI:1

```
0187      DO 342 LL=1,20
0188 342 IF (RLNE(LL) .EQ. 0) RLNE(LL)=RSFC
0190      RLNE(1)=RSFC
0191      RLNE(2)=RSFC
0192      WRITE(2,NR)(RLNE(I),I=1,20)
0193      IF (NR .EQ. 127) GOTO 52
0195      NR=(NDO-1)*6+121+6
0196      GOTO 341
0197 58 GOTO 53
0198 700 ICODE(4)=IAND(LSK,ICODE(4))
0199      IF (ICODE(4) .NE. LSK) GOTO 800
0201      ICODE(1)=ICODE(1)+1
0202      ICODE(2)=0
0203      ICODE(3)=82+ISHFT(81,8)
0204      ICODE(4)=LEOF
0205      CALL WRLOOP(I1ST)
0206      GOTO 25
0207 800 DO 810 J=4,120
0208      KKK=J
0209      ILM=IAND(MSK,ICODE(J))
0210      ILL=IAND(LSK,ICODE(J))
0211      IF (ILM .EQ. MSK) GOTO 820
0213 810 IF (ILL .EQ. LSK) GOTO 830
0215 820 ICODE(KKK)=IAND(LSK,ICODE(KKK))
0216      GOTO 840
0217 830 KKK=KKK-1
0218 840 WRITE(1,20)(ICODE(J),J=4,KKK)
0219 20 FORMAT(1X,39A2/1X,39A2/1X,39A2/)
0220      GOTO 25
0221 12 CONTINUE
0222      IF (NRCNO .GE. 107) NRCNO=NRCNO+1
0224      DO 200 J=4,128
0225 200 ICODE(J)=0
0226      ICODE(127)=LEOF
0227      IF (NRCNO .NE. 11) GOTO 210
0229      ICODE(4)=LHOME
0230      DO 220 J=5,16
0231 220 ICODE(J)=LF
0232      READ(8'11)(ICODE(I),I=17,56)
0233      ICODE(57)=LHOME
0234      ICODE(58)=LEOF
0235      CALL WRLOOP(I1ST)
0236      GOTO 330
0237 210      NWRTS=4
0238      IF (NOREC .LE. 3) NWRTS=1
0240      IF (NOREC .GE. 4 .AND. NOREC .LE. 6) NWRTS=2
0242      IF (NOREC .GE. 7 .AND. NOREC .LE. 9) NWRTS=3
0244      NN=NRCNO
0245      DO 310 J=1,NWRTS
0246      JJJ=J
0247      DO 450 K=4,126
0248 450 ICODE(K)=0
0249      IF (J .EQ. 1) ICODE(4)=LFF4
0251      IF (J .EQ. 1) ICODE(5)=LFF5
0253      READ(3'NN,ERR=500)(ICODE(I),I=6,45)
0254      N1=(J-1)*3+1
```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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PROC5.OBJ=PROC5.FOR/NOSN/LI:1

```
0255      IF (NOREC .LE. N1) GOTO 250
0257      NN=NN+1
0258      READ(3'NN,ERR=500)(ICODE(I),I=46,85)
0259      N2=N1+1
0260      IF (NOREC .LE. N2) GOTO 250
0262      NN=NN+1
0263      READ(3'NN,ERR=500)(ICODE(I),I=86,125)
0264      NN=NN+1
0265      250 ICODE(45)=ICRLF
0266          ICODE(85)=ICRLF
0267          ICODE(125)=ICRLF
0268          ICODE(126)=IDC1
0269          IF (J .EQ. NWRTS) ICODE(126)=LHOME
0271          CALL WRLOOP(I1ST)
0272          I1ST=1
0273      310 CONTINUE
0274      330 CONTINUE
0275          DO 70 J=1,NOREC
0276          NOR=NRCNO+J-1
0277          READ(3'NOR)(MOUT(I,J),I=1,10)
0278      70  WRITE(1,15)(MOUT(I,J),I=1,10)
0279          DO 80 J=1,11
0280          DO 80 I=1,10
0281      80  MOUT(I,J)=0
0282      500 CONTINUE
0283      IF (IST .NE. 9999) GOTO 25
0285      END
```

>

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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PROC1.OBJ=PROC1.FOR/NOSN/LI:1

```

      C      INTERPROCESS COMM & RESOURCE SHARING DEMO
      C
0001      INTEGER DEVST(6)
0002      COMMON /LOOP/ICODE(128),MSK,LSK
0003      COMMON /M1710/DEVST
0004      REAL*4 RONE,RTWO,RLNE(20),RSPC
0005      REAL*8 MOUT(10,11)
0006      DATA IH1H,IHH1/'405','2401/
0007      DATA IC9H,IHC9/'4401','411/
0008      DATA IC4H,IHC4,IC8H,IHC8/'2001','404','4001','410/
0009      DATA ILO,ICVA,LEOP/'51504','125125','177777/
0010      DATA RONE,RTWO,RSPC/' 1',' 2','  '
0011      DATA NO,IB,ID/'NO',' B',' ID'/
0012      DATA LSK/'377/
0013      DATA LHOME,ICRLF,IDC1/'24','106412','10400/
0014      DATA LFF4,LFF5/'14','5000/
0015      DATA LF/'12/
0016      DATA MSK/'177400/
0017      15  FORMAT(1X,10A8)
0018      DO 130 J=1,129
0019      DO 140 I=1,70
0020      140 CONTINUE
0021      130 K=DEVST(1)
0022      I1ST=0
0023      CALL ASSIGN(1,'TT0:')
0024      CALL ASSIGN(2,'INFO.DAT')
0025      DEFINE FILE 2(396,40,U,I1)
0026      CALL ASSIGN(3,'MSC.DAT')
0027      DEFINE FILE 3(211,40,U,I2)
0028      DEVST(5)=0
0029      IST=1
0030      I82T81=81+ISHFT(82,8)
0031      I81T82=82+ISHFT(81,8)
0032      ND=1
0033      NDO=5
0034      25  CALL RDLOOP
0035      WRITE(1,16)(ICODE(J),J=1,4)
0036      16  FORMAT(1X,'HEADER=',408)
0037      IF (ICODE(3) .EQ. IC4H) ICODE(3)=IHC4
0039      IF (ICODE(3) .EQ. IC8H) ICODE(3)=IHC8
0041      IF (ICODE(3) .EQ. IC9H) ICODE(3)=IHC9
0043      IF (ICODE(3) .EQ. I81T82) GOTO 700
0045      IF (ICODE(4) .NE. ILO) GOTO 630
0047      NRCNO=21
0048      NOREC=1
0049      IST=9999
0050      GOTO 12
0051      630 IF (IST .EQ. 1) GOTO 51
0053      IF (IST .EQ. 2) GOTO 52
0055      IF (IST .EQ. 3) GOTO 53
0057      IF (IST .EQ. 4) GOTO 54
0059      IF (IST .EQ. 5) GOTO 55
0061      IF (IST .EQ. 6) GOTO 56
0063      IF (IST .EQ. 7) GOTO 57
0065      IF (IST .EQ. 8) GOTO 58
0067      IF (IST .EQ. 9) IST=1

```

FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]FRI 18-MAR-77 12:51:31 PAGE 002
PROC1.OBJ=PROC1.FOR/NOSN/LI:1

```
0069      GOTO 51
0070      51 NRCNO=1
0071      NOREC=2
0072      IST=2
0073      GOTO 12
0074      52 DO 362 J=1,6
0075      NR=(ND-1)*6+121+J
0076      READ(2'NR)(MOUT(I,J),I=1,10)
0077      362 WRITE(3'44+J)(MOUT(I,J),I=1,10)
0078      NRCNO=45
0079      NOREC=6
0080      IST=IST+1
0081      GOTO 12
0082      53 DO 363 J=1,6
0083      NR=(ND-1)*6+121+J
0084      READ(2'NR)(MOUT(I,J),I=1,10)
0085      363 WRITE(3'44+J)(MOUT(I,J),I=1,10)
0086      NRCNO=45
0087      NOREC=6
0088      IST=IST+1
0089      GOTO 12
0090      54 ICODE(1)=ICV,
0091      ICODE(5)=LEOF
0092      ICODE(2)=16
0093      ICODE(4)=81+ISHFT(2,8)
0094      ITSV=ICODE(3)
0095      ICODE(3)=IHH1
0096      CALL WRLOOP(I1ST)
0097      ICODE(3)=5+ISHFT(5,8)
0098      CALL WRLOOP(I1ST)
0099      ICODE(3)=6+ISHFT(5,8)
0100      CALL WRLOOP(I1ST)
0101      ICODE(4)=82+ISHFT(1,8)
0102      CALL WRLOOP(I1ST)
0103      ICODE(3)=IHH1
0104      CALL WRLOOP(I1ST)
0105      ICODE(3)=5+ISHFT(5,8)
0106      CALL WRLOOP(I1ST)
0107      ICODE(3)=2+ISHFT(5,8)
0108      CALL WRLOOP(I1ST)
0109      ICODE(3)=ITSV
0110      ICODE(1)=ICODE(1)+1
0111      ICODE(2)=0
0112      NR=(ND-1)*6+121+6
0113      331 READ(2'NR)(RLNE(I),I=1,20)
0114      DO 332 LL=1,20
0115      332 IF (RLNE(LL).EQ. 0) RLNE(LL)=RSPC
0116      RLNE(1)=RTWO
0117      RLNE(2)=RONE
0118      WRITE(2'NR)(RLNE(I),I=1,20)
0119      IF (NR.EQ. 151) GOTO 52
0120      NR=(ND-1)*6+121+6
0121      GOTO 331
0122      55 GOTO 53
0123      56 ICODE(1)=ICODE(1)+1
0124      ICODE(2)=0
```


FORTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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PAGE 003

PROC1.OBJ=PROC1.FOR/NDSN/LI:1

```
0127      ICODE(3)=I82T81
0128      ICODE(4)=LEOP
0129      CALL WRLOOP(I1ST)
0130      T1=SECNDS(0.)
0131      90 I=MOD(DEVST(3),2)
0132      IF (I .EQ. 1) GOTO 120
0134      IF (I .EQ. -1) GOTO 120
0136      DO 110 I=1,10
0137      110 CONTINUE
0138      DELTA=SECNDS(T1)
0139      IF (DELTA .GE. 20.) GOTO 150
0141      GOTO 90
0142      120 DO 131 J=1,129
0143      DO 141 I=1,3
0144      141 CONTINUE
0145      K=DEVST(1)
0146      131 CONTINUE
0147      DEVST(5)=0
0148      ICODE(4)=IB
0149      ICODE(5)=ID
0150      ICODE(6)=LEOP
0151      GOTO 160
0152      150 ICODE(4)=NO
0153      ICODE(5)=IB
0154      ICODE(6)=ID
0155      ICODE(7)=LEOP
0156      160 ICODE(1)=0
0157      ICODE(2)=0
0158      ICODE(3)=ITSV
0159      CALL WRLOOP(I1ST)
0160      IF (ICODE(4) .EQ. IB) GOTO 170
0162      IST=1
0163      GOTO 25
0164      170 NRCNO=14
0165      NOREC=1
0166      IST=7
0167      GOTO 12
0168      57 ICODE(3)=I82T81
0169      CALL WRLOOP(I1ST)
0170      ICODE(1)=ICVA
0171      ICODE(5)=LEOP
0172      ICODE(2)=16
0173      ICODE(4)=81
0174      ICODE(3)=IHH1
0175      CALL WRLOOP(I1ST)
0176      ICODE(3)=5+ISHFT(5,8)
0177      CALL WRLOOP(I1ST)
0178      ICODE(4)=82
0179      CALL WRLOOP(I1ST)
0180      ICODE(3)=IHH1
0181      CALL WRLOOP(I1ST)
0182      ICODE(3)=ITSV
0183      ICODE(1)=ICODE(1)+1
0184      ICODE(2)=0
0185      NR=(ND-1)*6+121+6
0186      341 READ(2'NR')(RLNE(I),I=1,20)
```

FORTTRAN IV V01B-02
CORE=08K, UIC=[20,20]

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PAGE 004

PROC1.OBJ=PROC1.FOR/NOSN/LI:1

```

0187      DO 342 LL=1,20
0188 342 IF (RLNE(LL) .EQ. 0) RLNE(LL)=RSPC
0190      RLNE(1)=RSPC
0191      RLNE(2)=RSPC
0192      WRITE(2,NR)(RLNE(I),I=1,20)
0193      IF (NR .EQ. 151) GOTO 52
0195      NR=(NDO-1)*6+121+6
0196      GOTO 341
0197      58 GOTO 53
0198 700 ICODE(4)=IAND(LSK,ICODE(4))
0199      IF (ICODE(4) .NE. LSK) GOTO 800
0201      ICODE(1)=ICODE(1)+1
0202      ICODE(2)=0
0203      ICODE(3)=I82TB1
0204      ICODE(4)=LEOP
0205      CALL WRLOOP(I1ST)
0206      GOTO 25
0207 800 DO 810 J=4,120
0208      KKK=J
0209      ILM=IAND(MSK,ICODE(J))
0210      ILL=IAND(LSK,ICODE(J))
0211      IF (ILM .EQ. MSK) GOTO 820
0213 810 IF (ILL .EQ. LSK) GOTO 830
0215 820 ICODE(KKK)=IAND(LSK,ICODE(KKK))
0216      GOTO 840
0217 830 KKK=KKK-1
0218 840 WRITE(1,20)(ICODE(J),J=4,KKK)
0219      20 FORMAT(1X,39A2/1X,39A2/1X,39A2/)
0220      GOTO 25
0221      12 CONTINUE
0222      IF (NRCNO .GE. 107) NRCNO=NRCNO+1
0224      DO 200 J=4,128
0225 200 ICODE(J)=0
0226      ICODE(127)=LEOP
0227      IF (NRCNO .NE. 11) GOTO 210
0229      ICODE(4)=LHOME
0230      DO 220 J=5,16
0231 220 ICODE(J)=LF
0232      READ(8,11)(ICODE(I),I=17,56)
0233      ICODE(57)=LHOME
0234      ICODE(58)=LEOP
0235      CALL WRLOOP(I1ST)
0236      GOTO 330
0237 210      NWRTS=4
0238      IF (NOREC .LE. 3) NWRTS=1
0240      IF (NOREC .GE. 4 .AND. NOREC .LE. 6) NWRTS=2
0242      IF (NOREC .GE. 7 .AND. NOREC .LE. 9) NWRTS=3
0244      NN=NRCNO
0245      DO 310 J=1,NWRTS
0246      JJJ=J
0247      DO 450 K=4,126
0248 450 ICODE(K)=0
0249      IF (J .EQ. 1) ICODE(4)=LFF4
0251      IF (J .EQ. 1) ICODE(5)=LFF5
0253      READ(3,NN,ERR=500)(ICODE(I),I=6,45)
0254      N1=(J-1)*3+1

```

FORTRAN IV V01B-02
CORE=08K, UIC=L20,20J

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PAGE 005

PROC1.OBJ=PROC1.FOR/NOSN/LI:1

```
0255      IF (NOREC .LE. N1) GOTO 250
0257      NN=NN+1
0258      READ(3'NN,ERR=500)(ICODE(I),I=46,85)
0259      N2=N1+1
0260      IF (NOREC .LE. N2) GOTO 250
0262      NN=NN+1
0263      READ(3'NN,ERR=500)(ICODE(I),I=86,125)
0264      NN=NN+1
0265      250 ICODE(45)=ICRLF
0266          ICODE(85)=ICRLF
0267          ICODE(125)=ICRLF
0268          ICODE(126)=IDC1
0269          IF (J .EQ. NWRTS) ICODE(126)=LHOME
0271          CALL WRLOOP(I1ST)
0272          I1ST=1
0273      310 CONTINUE
0274      330 CONTINUE
0275          DO 70 J=1,NOREC
0276              NOR=NRCNO+J-1
0277              READ(3'NOR)(MOUT(I,J),I=1,10)
0278      70  WRITE(1,15)(MOUT(I,J),I=1,10)
0279              DO 80 J=1,11
0280                  DO 80 I=1,10
0281      80  MOUT(I,J)=0
0282      500 CONTINUE
0283          IF (IST .NE. 9999) GOTO 25
0285      END
```

>

1.7 Diagnostics

1.7.1 PDP-11 Interface (PDP)

This diagnostic program checks the M1710 PDP-11 interface and the Host Interface Board. The diagnostic runs on the host machine to be tested and the microcode object file PDPO.OBJ runs on the B7* CIE microprocessor connected to that host. The source (.FOR), object (.OBJ), and the task (.TSK) files reside on ESM Tape #4. The program uses terminal TTO: for I/O. A timing parameter is requested which is entered in I3 format, and which must be greater or equal to 3. This timing parameter controls the rate at which words are sent across the interface. The program then provides a time for packet transmission printout. A three line packet can then be entered on the terminal. Proper interface operation results in the message being printed on the terminal after the CIE program is run from location WRTB (see PDPO description in Section 2.3).

Task Builder (TKB) options are:

```
UNITS=1
ACTFIL=1
MAXBUF=80
COMMON=M1710:RW
ASG=TTO:1
```

1.7.2 Control Memory - CONMEM

ESM Tape #4 contains the source (.FOR), object (.OBJ), and task (.TSK) files for the control memory checking program (CONMEM). The program is a variation of the ESMLDR utility described in Section 1.4 in which a halt is inserted at the last word of control memory. The program is useful in debugging certain types of control memory and loading problems.

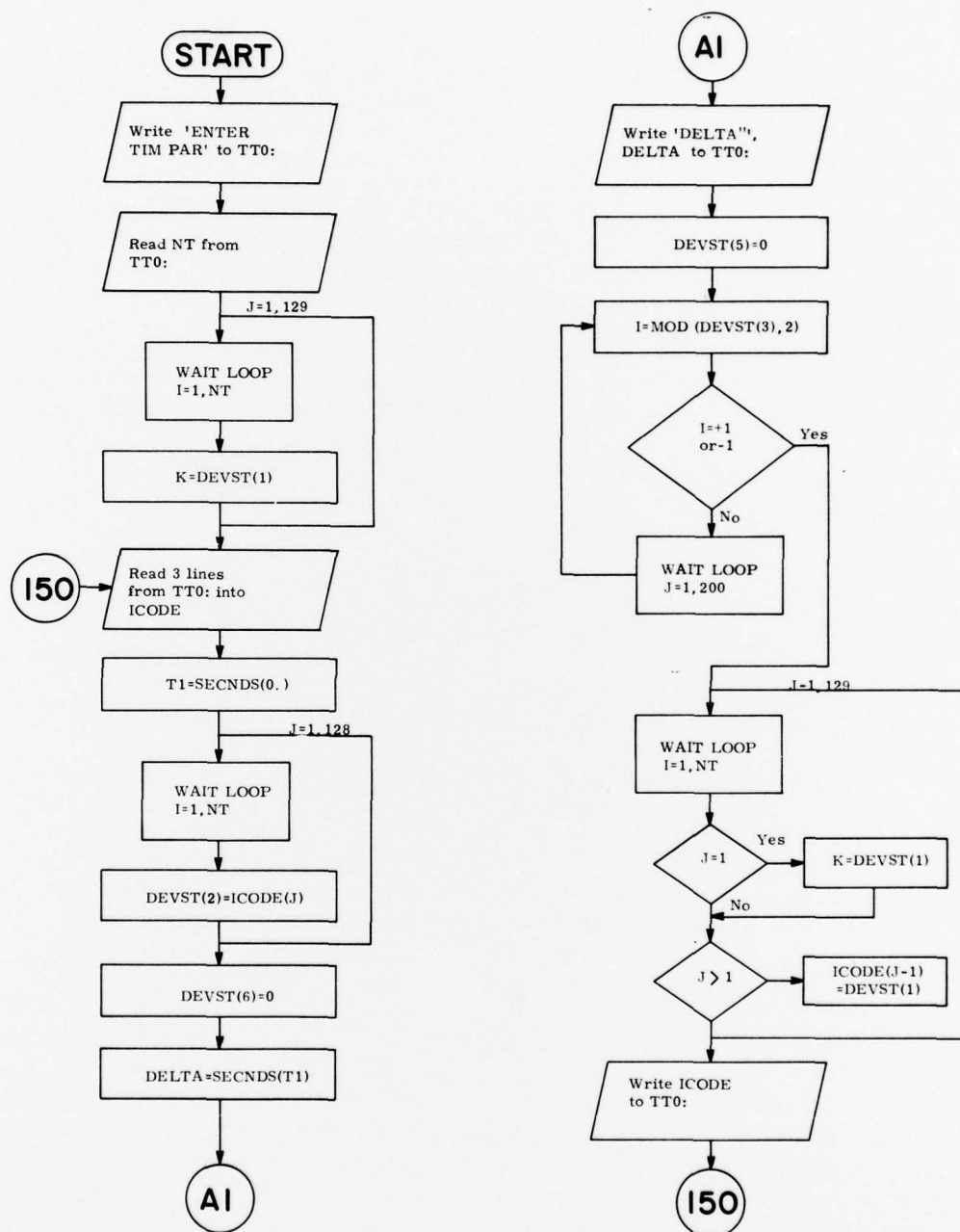


Figure 1-23. PDP

FORTRAN IV V01B-02
CORE=08K, UIC=[1,4]

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PDP.OBJ=PDP.FOR/NOSN/LI:1

```
      C      DIAG PROG FOR CKING M1710-CIE INT
0001      INTEGER DEVST(6)
0002      COMMON /M1710/DEVST
0003      DIMENSION ICODE(128)
0004      CALL ASSIGN(1,'TT0:')
0005      NT=70
      D      WRITE(1,300)
D 300      FORMAT(1X,'ENTER TIM PAR')
      D      READ(1,310) NT
D 310      FORMAT(I3)
      C      THROW AWAY PACKET FOR INP BUF INIT EMPTY
0006      DO 130 J=1,129
0007      DO 140 I=1,NT
0008      140 CONTINUE
0009      130 K=DEVST(1)
0010      150 READ(1,30)(ICODE(I),I=1,40)
0011      READ(1,30)(ICODE(I),I=41,80)
0012      READ(1,30)(ICODE(I),I=81,120)
0013      30 FORMAT(40A2)
      D      T1=SECNDS(0.)
0014      DO 70 J=1,128
0015      DO 80 I=1,NT
0016      80 CONTINUE
0017      70 DEVST(2)=ICODE(J)
0018      DEVST(6)=0
      D      DELTA=SECNDS(T1)
      D      WRITE(1,400) DELTA
D 400      FORMAT(1X,'DELTA=',F9.5)
0019      DEVST(5)=0
0020      90 I=MOD(DEVST(3),2)
0021      IF (I .EQ. 1) GOTO 120
0023      IF (I .EQ. -1) GOTO 120
0025      DO 110 J=1,200
0026      110 CONTINUE
0027      GOTO 90
0028      120 DO 230 J=1,129
0029      DO 240 I=1,NT
0030      240 CONTINUE
0031      IF (J .EQ. 1) K=DEVST(1)
0033      IF (J .GT. 1) ICODE(J-1)=DEVST(1)
0035      230 CONTINUE
0036      WRITE(1,160)(ICODE(I),I=1,39)
0037      WRITE(1,160)(ICODE(I),I=41,79)
0038      WRITE(1,160)(ICODE(I),I=81,119)
0039      160 FORMAT(1X,39A2/)
0040      GOTO 150
0041      END
```

>

FORTRAN IV V01B-02
CORE=08K, UIC=L1,4J

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PAGE 001

CONMEM.OBJ=CONMEM.FOR/NOSN/LI:1

```
0001      INTEGER DEVST(6),CODE(128)
0002      REAL*8 ZA(3)
0003      COMMON /M1710/DEVST
0004      DATA ISTEP/'607/
0005      DATA IAON/'177777/
0006      DATA IER1,IER2/'363,'7776/
0007      CALL ASSIGN(1,'TT1:')
0008      WRITE(1,11)
0009      11 FORMAT(1X,'PLEASE ENTER OBJECT FILE NAME')
0010      READ(1,12)ZA
0011      12 FORMAT(3A8)
0012      CALL ASSIGN(2,ZA)
0013      DEFINE FILE 2(32,128,U,I1)
0014      DO 20 NREC=1,32
0015      NR=NREC
0016      READ(2,NREC,END=99,ERR=99) CODE
0017      DO 18 J=1,128
0018      DO 16 KK=1,5
0019      16 CONTINUE
0020      IF (CODE(J) .EQ. IAON) CODE(J)=ISTEP
0022      DEVST(2)=CODE(J)
0023      18 CONTINUE
0024      WRITE (1,13) NREC
0025      13 FORMAT(1X,I3,' 128 INSTRUCTION GROUPS LOADED.')
0026      20 CONTINUE
0027      99 DO 30 J=1,128
0028      30 CODE(J)=ISTEP
0029      DO 40 N=NR,31
0030      DO 40 J=1,128
0031      DO 50 KK=1,5
0032      50 CONTINUE
0033      DEVST(2)=CODE(J)
0034      40 CONTINUE
0035      CODE(126)=IER1
0036      CODE(127)=IER2
0037      DO 60 J=1,127
0038      DO 70 KK=1,5
0039      70 CONTINUE
0040      DEVST(2)=CODE(J)
0041      60 CONTINUE
0042      END
```

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